



**USING PODCASTS TO MEDIATE REFLECTIVE LEARNING: A CASE OF A POSTGRADUATE  
PROGRAMME AT A HIGHER EDUCATION INSTITUTION**

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## Compulsory Declaration

1. This work has not been previously submitted in whole, or in part, for an award of any degree.
2. This dissertation, titled *Using podcasts to mediate reflective learning: a case of a postgraduate programme at a higher education institution*, is my own work.
3. Each significant contribution to and quotation in this dissertation, titled *Using podcasts to mediate reflective learning: a case of a postgraduate programme at a higher education institution*, from the work(s) of other people has been attributed, and has been cited and referenced. I have used the APA convention for citation and referencing.

Signature: \_\_\_\_\_

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## Abstract

Although reflective learning in higher education is increasing, not much research has been conducted on using reflective learning for discursive knowledge production among students whose first language is not English. Discursive knowledge production is the meaning making process initiated when one encounters new information. This implies that students whose first language is not English are less likely to be active discussants and are disadvantaged participants in discursive knowledge production activities. The research question this study sought to answer is: how are podcasts used to mediate reflection among postgraduate students at an institution of higher education? The researcher used Hatton and Smith's framework to explore and identify the types of reflection that podcast use mediates.

The study was interpretive in nature and employed both qualitative and quantitative methods to ensure methodological triangulation. Qualitative methods were used to gain insight into subjects' behaviour, through analysis of views and opinions regarding the use of podcasts for educational purposes. Qualitative data was collected through participant observation and interviews, as the main research strategy was ethnography. Quantitative data, in the form of access logs were used to highlight patterns of frequency of access of podcasts, as well as corroborate interview data. A case study approach was employed in line with the objective of the study; to focus on podcasting as a single phenomenon in order to understand its potential for promoting reflection in higher education in its real-life context. The study was conducted in 2008 (pilot study) and 2009 (main study) at the University of Cape Town with two cohorts of students enrolled on a postgraduate programme in Education. There were a total of 129 podcasts with 2505 downloads among thirty-three students in two years. Participant observation and face-to-face interviews were conducted in settings within which students' experiences with podcasts occurred.

Constructivism was used to explain how learning, through the use of podcasts takes place. Structuration Theory was used to explore how social structures exert influence on actions students take when using tools which mediate learning in general and reflection in particular.

The primary aim was to investigate how students used podcasts in order to mediate reflection. The secondary aim was to propose a framework that could be used to mediate reflection through the use of podcasts.

The study has shown that, like other technologies used in education, simply providing podcasts to students does not necessarily mediate reflection. The study concludes that using constructivist principles in integrating podcasts into learning activities can mediate reflection. It concludes that when well integrated in a learning task, podcasts scaffold various cognitive processes involved in argument articulation processes. Podcasts thus have the potential to mediate various forms of reflection, leading to better learning outcomes. The study has concluded that podcasts mediate descriptive, dialogic and critical reflection. The contribution of this research to academic scholarship is a framework for mediating reflection using podcasts. The framework highlights which types of podcast can be used to mediate specific forms of reflection.

## TABLE OF CONTENTS

Compulsory Declaration .....	ii
Acknowledgements.....	iii
Abstract .....	iv
<b>LIST OF TABLES, FIGURES, GRAPHS AND APPENDICES.....</b>	<b>XI</b>
Tables.....	xi
Figures.....	xi
Graphs .....	xi
Appendices.....	xi
Acronyms.....	xiii
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>INTRODUCTION .....</b>	<b>1</b>
1.1 OVERVIEW .....	1
1.2 RESEARCH TOPIC.....	4
1.3 RESEARCH OBJECTIVES .....	5
1.4 NECESSITY OF THE RESEARCH .....	5
1.5 STRUCTURE OF THE DISSERTATION.....	6
Chapter One: Introduction .....	6
Chapter Two: Literature Review .....	6
Chapter Three: Theoretical Underpinning.....	6
Chapter Four: Research Methodology and Methods .....	7
Chapter Five: Description of Case Study.....	7
Chapter Six: Data Analysis Procedures and Presentation of Findings .....	7
Chapter Seven: Discussion of Research Findings .....	7
Chapter Eight: Conclusion.....	7
1.6 CHAPTER SUMMARY.....	8
<b>CHAPTER TWO .....</b>	<b>9</b>

<b>LITERATURE REVIEW .....</b>	<b>9</b>
2.0 INTRODUCTION.....	9
2.1 REFLECTION IN EDUCATION .....	9
2.1.1 Definition of Reflection .....	9
2.1.2 Processes of Reflection .....	10
2.1.3 Skills of Reflection .....	11
2.1.4 Types of Reflection.....	13
2.1.5 Benefits of Reflection .....	16
2. 2. PODCASTING.....	17
2.2.1 History of podcasting.....	17
2.2.2 Advantages of Using Podcasting over Other Forms of Audio Media .....	18
2.2.3 Current General Uses of Podcasting .....	19
2.2.4 Podcasting in Education.....	20
2.2.5 Types of Podcasts .....	22
2.2.6 Why Use Podcasts.....	26
2.2.7 Podcasting for Academic Purposes.....	27
2.2.8 A Tool for Reflection.....	28
2.3 CHAPTER SUMMARY.....	32
<b>CHAPTER THREE.....</b>	<b>34</b>
<b>THEORETICAL UNDERPINNING.....</b>	<b>34</b>
3.0 INTRODUCTION.....	34
3.1 CONSTRUCTIVISM.....	34
3.1.1 Learning from the Constructivist Perspective.....	34
3.1.2 Implications for Teaching and Learning.....	36
3.2 STRUCTURATION THEORY .....	38
3.2.1 Basic Assumptions of Structuration Theory .....	38
3.2.2 Structuration Theory and Technology Use .....	40

3.2.3 Structuration Theory and Change .....	42
3.3 CHAPTER SUMMARY.....	44
<b>CHAPTER FOUR .....</b>	<b>45</b>
<b>RESEARCH METHODOLOGY AND METHODS .....</b>	<b>45</b>
4.0 INTRODUCTION.....	45
4.1 RESEARCH METHODOLOGY .....	45
4.2 DATA COLLECTION METHODS .....	47
4.2.1 Document Analysis.....	48
4.2.2 Participant Observation.....	48
4.2.3 Face-to-face Interviews.....	49
4.3 ETHICAL CONSIDERATIONS.....	51
4.4 TIMELINE.....	53
4.5 CHAPTER SUMMARY.....	53
<b>CHAPTER FIVE .....</b>	<b>54</b>
<b>DESCRIPTION OF CASE STUDY .....</b>	<b>54</b>
5.0 INTRODUCTION.....	54
5.1 CONTEXT OF THE STUDY.....	54
5.1.1 Higher Education in South Africa.....	54
5.1.2 The University of Cape Town - UCT .....	56
5.1.3 Centre for Educational Technology - CET .....	56
5.2 STRUCTURE OF MASTERS PROGRAMME.....	57
5.2.1 Curriculum Overview .....	58
5.2.2 Issues and Debates .....	59
5.2.3 Learning Tasks.....	60
5.3 CASE STUDY DESCRIPTION.....	62
5.3.1 Pilot Study: Issues and Debates .....	62
5.3.2 Main Study: Issues and Debates .....	63
5.4 CHAPTER SUMMARY.....	66



<b>CHAPTER SIX .....</b>	<b>67</b>
<b>DATA ANALYSIS PROCEDURES AND PRESENTATION OF FINDINGS.....</b>	<b>67</b>
6.0 INTRODUCTION.....	67
6.1 DATA ANALYSIS PROCEDURES.....	67
6.1.1 Document Analysis.....	67
6.1.2 Observation Data .....	76
6.1.3 Interview Data.....	77
6.2 CHAPTER SUMMARY.....	79
<b>CHAPTER SEVEN.....</b>	<b>81</b>
<b>DISCUSSION OF FINDINGS.....</b>	<b>81</b>
7.0 INTRODUCTION.....	81
7.1 DISCUSSION OF FINDINGS .....	81
7.1.1 Document Analysis.....	81
7.1.2 Observation Data .....	83
7.1.3 Interview Data.....	85
7.1.3.1: Instructional design.....	86
7.1.3.2: Medium of use .....	88
7.1.3.3: Learning support .....	89
7.1.3.4: Selective listening .....	95
7.1.3.5: RSS feeds.....	97
7.2 CHAPTER SUMMARY.....	99
<b>CHAPTER EIGHT .....</b>	<b>100</b>
<b>CONCLUSION .....</b>	<b>100</b>
8.0 INTRODUCTION.....	100
8.1 REVIEW OF RESEARCH QUESTIONS .....	102
8.2 SUGGESTIONS FOR FURTHER RESEARCH.....	105
8.3 LIMITATIONS OF THE STUDY.....	106
8.4 CONCLUDING REMARKS .....	106

REFERENCES .....	108
APPENDICES.....	118

## List of Tables, Figures, Graphs and Appendices

### Tables

Table 2.1.1: Framework for identifying reflection (Smith 1992, quoted in Hatton & Smith, 1995) .....	15
Table 2.2.2: Type of reflection and podcasts promoting each (based on Hatton & Smith, 1995 and Campf & Gallagher, 2008).....	31
Table 5.3.1: Student profile 2008 .....	63
Table 5.3.2: Student profile 2009 .....	65
Table 6.1.1: Distribution of podcast access by content .....	69
Table 6.1.2: Podcast users 2008.....	71
Table 6.1.3: Comparison of anonymous and Vula log-ins 2009 .....	74
Table 6.1.4: Podcast users 2009.....	75
Table 6.1.5: Profile of interviewees.....	77
Table 6.1.6: Themes emerging from interview data 2009 .....	79
Table 8.0.1: Framework for mediating reflection using podcasts (based on Hatton & Smith, 1995; Strampel & Oliver, 2007 and Campf & Gallagher, 2007).....	102

### Figures

Figure 3.4.1 : Elements of structure, source Giddens (1984) .....	40
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### Graphs

Graph 6.1.1: Comparison of variation in podcast access for 2008/2009 .....	68
Graph 6.1.2 : Frequency of access of all podcasts 2008 .....	70
Graph 6.1.3: Frequency of access of all podcasts 2009 .....	72

### Appendices

Appendix A: Interview schedule .....	118
Appendix B: Research outline .....	119

Appendix C: Sites publishing podcasts on Vula.....	121
Appendix D: Consent form.....	122

## Acronyms

**AST** - Adaptive Structuration Theory

**CET** - Centre for Educational Technology

**CHED** - Centre for Higher Education Development

**CLE** - Collaboration and Learning Environment

**CCMC** - Constant Comparative Method of Coding

**CMC** - Computer-Mediated Communication

**DOE** - Department of Education

**DFAQ** - Dynamic Frequently Asked Questions

**ECP** - Extended Curriculum Programme

**FGSH** - Faculty of Graduate Studies in Humanities

**ICTs** - Information and Communication Technologies

**IM** - Instant Messaging

**IMPALA** - The Informal Mobile Podcasting and Learning Adaptation project

**IS** - Information Systems

**IT** - Information Technology

**HBI**s - Historically Black Institutions

**HEI**s - Higher Education Institutions

**HWI**s - Historically White Institutions

**GSH** - Graduate School in Humanities

**LMS** - Learning Management System

**MOV** – QuickTime multimedia file format used to store, transfer and playback video files

**MP3** – digital format used to store, transfer and play back compressed audio files, including music

**MP4** – multimedia format used to store, transfer and play back video files

**NCHE** - National Commission for Higher Education

**PGDE** - Post Graduate Diploma in Education

**RSS** - Really Simple Syndication (also Rich Site Summary)

**SAC** - South African College

**SOE** - School of Education

**ST** - Structuration Theory

**THES** - Times Higher Education Supplement

**UCT** - University of Cape Town

**UCSLE** - Upper Campus Student Learning Centre

**UKZN** – University of KwaZulu-Natal

**WAVE** – digital format used to store, transfer and play back audio files, including music

**WMA** - digital format created by Microsoft, used to store, transfer and play back audio files, including music

# CHAPTER ONE

## INTRODUCTION

### 1.1 OVERVIEW

Institutions of higher education in Africa face many challenges such as the increasing student population and the associated student expectation of personalized support; limitations imposed on academic excellence by language of instruction for students whose official language of instruction is sometimes a second or third language. In South Africa, as is the case in many African countries, a significant number of students are disadvantaged with regards to the language of instruction. According to Teferra and Altbach (2004), of the seven languages of instruction currently used in higher education institutions on the continent, only two are considered indigenous to the continent. The dominant languages of instruction, namely English, French and Portuguese are of European origin. Western languages, most notably English, are the medium in which resources that students use for research, including the Internet, and global knowledge systems are published.

Consequently, a large number of students are instructed in a second or third language, putting them at a disadvantage compared to students whose first language is English. This makes it difficult for them to become active knowledge constructors due to the gap between grasping curriculum content written and presented in a language other than a student's mother tongue, and engaging with content in a discursive manner. To address this problem, there is need to explore ways of enabling students to reflect on what is being taught without being limited by language, provide scaffolding in refining arguments and empowering them to better articulate the knowledge production process. In the context of South Africa, the need to address the barriers imposed by the medium of instruction especially for learners from previously disadvantaged backgrounds is both urgent and critical.

Also of significance is the role of higher education, especially at postgraduate level, of preparing students for lifelong learning, continuing professional development of teachers and preparing academic staff for their teaching duties. Although reflective learning in higher education is increasing, not much has been done on using reflective learning for discursive knowledge production among students who struggle with English. If successful in higher education, this approach would empower students in acquiring the skills to compete, innovate and respond to situations they are likely to face in the knowledge economy. However, preparation of students for the 21<sup>st</sup> Century knowledge economy demands that higher education institutions - HEIs exploit emerging technologies in the quest to address teaching and learning challenges. Government acknowledges the significance of using information and communication technologies - ICTs in enhancing teaching and learning experiences. This is in addition to recognizing the importance of system-wide provision and use of ICTs. The Department of Education - DOE (2004, p. 8, 14) observes that 'ICTs have the potential to improve the quality of education and training', as well as promoting '... high order thinking skills such as comprehension, reasoning, problem-solving and creative thinking ...' all of which increase employability in the knowledge society.

Higher education institutions have to therefore, contend with finding innovative ways of integrating technologies which are increasingly being used in society to achieve teaching and learning outcomes. Adam (2003) and the World Bank (2002) suggest that ICTs have an important role in delivering quality educational experiences to diverse student populations, as well as meeting the increasing teaching demands of academic staff. This is because ICTs can provide additional means through which reflection can be mediated. The end result of effectively mediated reflection is the achievement of educational objectives, as students are actively involved in knowledge construction processes. It can be inferred from Adam (2003) and the World Bank (2002) that the provision of quality educational resources includes using ICTs to mediate reflective learning for discursive knowledge production. Discursive knowledge production is the meaning making process initiated when one encounters new information. It includes, but is not restricted to reflection.

In a society that is increasingly valuing knowledge as the main currency, it is imperative that the opportunities for ICTs in meeting the needs of students' access to knowledge are fully



exploited. For example, during lectures and seminars, students do not have enough reflective space to engage with curriculum content at a deeper level. This lack of reflective space may be compounded when students have to overcome language barriers before they can understand and engage with content. This implies that students whose first language is not English are less likely to be active discussants and are disadvantaged participants in discursive knowledge production activities. In this regard, using ICTs has several advantages including but not limited to; helping students create personalized reflective spaces and allowing them to engage in self-paced discursive activities.

The massification of higher education in South Africa has led to a significant increase in lecturer-to-student ratios. Adam (2003) and the World Bank (2002) point out that ICTs can be used to enhance the learning experiences of diverse student populations. This is in addition to meeting the teaching demands of academic staff. The affordances of ICTs in meeting the said challenges lie in the opportunities provided by emerging technologies. There has been increased interest in the use of the latest generation of Web-based collaboration software in education. The Web 2.0 tools, in particular wikis, podcasts and blogs have the potential to support students' reflection, thereby improving the quality of discursive knowledge production. Using wikis students can collectively write a reflective article which augments individual reflection, students can use blogs to maintain a reflective on-line diary and podcasts can mediate the reflective process as they can be used as audio learning resources. Web 2.0 tools can also be used across many disciplines, making it possible to integrate them seamlessly into the curriculum. The study focussed on podcasts because unlike blogs, students did not need to have constant access to the Internet to use them. The study also focussed on podcasts as students whose first language is not English are more likely to benefit from audio learning resources rather than textual ones only. This is because it is easier and natural to speak and listen, as opposed to reading and writing.

Brittain, Glowacki, van Ittersum and Johnson (2006) define a podcast as an audio recording that can be made available through the Internet. Podcasts are downloaded to play back devices, such as iPods, computers or portable MP3 players. Access to the Internet is not necessary once podcasts have been downloaded to play back devices. Additionally play back devices are inexpensive and most students already own and use them for other purposes

including communication and entertainment. Academics using podcasts would thus take advantage of student ownership of play back devices. This reduces both the cost and learning curve for students. This is in addition to ensuring equitable access to learning resources as students download and listen to podcasts as and when the need arises.

The use of podcasting has risen significantly since its development in 2000. One of the reasons advanced for this increase is that it is a cheap and cost-effective technology, which enables podcasts to be created and distributed easily (Allen, 2006). Other reasons for the rapid uptake of podcast services are; the pervasive nature of the Internet and rapid broadband growth, all of which make it easy for podcasts to be downloaded from the Web (Educause Learning Initiative, 2005; Panday & Lee, 2007.) Edirisingha, Rizzi, Nie and Rothwell (2007) add that the use of podcasting by the media, entertainment and journalism industries as an alternative means of delivering content, as well as the increased ownership of portable MP3 devices has further spurred the popularity of podcasting. Edirisingha and Salmon (2007) have suggested that the interactive nature (read/write) of Web 2.0 tools has also contributed to the popularity of podcasts. Podcasts are distributed via the Internet, which most students use frequently for general purposes such as sharing resources, communication and entertainment. It therefore seems prudent to use podcasting in education as it utilizes technologies that have taken root in the students' social and cultural environment. While using audio in education is not new, podcasting significantly reduces the cost, while increasing the scope of distribution compared to earlier forms of delivering audio learning resources such as audio cassettes and CD-ROMS.

## **1.2 RESEARCH TOPIC**

The primary research question was:

How are podcasts used to mediate reflection among postgraduate students at an institution of higher education?

The following were the secondary research questions:

- I. How can reflection be mediated?
- II. How can podcasts be integrated in learning activities in order to mediate reflection?
- III. How has the use of podcasts altered the way in which students use various learning resources?
- IV. How has the use of podcasts transformed students' habits of reflection?

### **1.3 RESEARCH OBJECTIVES**

The primary aim of the study was to investigate podcasting activities that mediate reflection among postgraduate students in higher education. This involved investigating how students took advantage of the affordances of Web 2.0 tools, specifically podcasts, in mediating reflection. The study also looked at how podcasts were integrated into learning activities. The secondary aim of the study was to develop a framework for using podcasts to scaffold reflection oriented towards achieving educational objectives.

### **1.4 NECESSITY OF THE RESEARCH**

In 2007, Brookbank and McGill noted that improving students' ability to dialogue with self (reflection) is crucial in 'effectively and consciously' promoting learning. Educators have traditionally used activities like question and answer sessions, classroom discussions and student-created content like essays as ways of mediating reflection. According to Daudelin (1996), reflection has been credited as the primary means through which effective learning takes place. Reflection is thought to enable students to effectively integrate prior knowledge with incoming information, and has cognitive benefits that include the development of higher order information processing skills. Strampel and Oliver (2007) argue that reflection leads to conceptual change, knowledge transfer and action. Strampel and Oliver suggest that students engaged in reflection draw upon different cognitive processes, ranging from recalling events or experiences, to critically analyzing them and taking action that is appropriate for the

context. Consequently, improving student reflective practices can potentially result in positive effects in achieving learning objectives.

Educators are increasingly using emerging technologies to provide additional ways through which to mediate reflection, empower students and make them active knowledge constructors. Studies conducted by the Informal Mobile Podcasting and Learning Adaptation - IMPALA project at various partner institutions have shown that podcasts enhance cognition and knowledge acquisition (Cane & Cashmore, 2008), support on-line and distance learning initiatives (Edirisingha et al., 2007; Fothergill, 2008) and increase access to educational material (McGarr, 2009). Though podcasts were not used during face-to-face sessions, students on the study had the opportunity to use them while reflecting on their learning in the daily reflective journal they kept as part of their individual tasks. The journaling provided the opportunity for self 'intentional reflective dialogue', which Brookbank and McGill (2007) suggest is fundamental in achieving educational objectives.

## **1.5 STRUCTURE OF THE DISSERTATION**

### **Chapter One: Introduction**

This chapter introduces the study by giving an overview of the challenges higher education institutions in Africa face. It outlines the research objectives, research topic and necessity of the research before providing an overall structure of the dissertation.

### **Chapter Two: Literature Review**

This chapter is an empirical and theoretical literature review. It incorporates a review of the literature on reflection in education and podcasting.

### **Chapter Three: Theoretical Underpinning**

This chapter is a presentation of the theoretical underpinnings the study draws upon in order to better understand podcast-mediated reflection. It briefly looks at learning from the Constructivist perspective, Structuration Theory and how it has been applied in explaining the use of technology in various contexts.

## **Chapter Four: Research Methodology and Methods**

This chapter covers the research methodology employed during the study. It outlines the research design and data collection procedures. It draws on methodology literature to justify the methods used.

## **Chapter Five: Description of Case Study**

This chapter gives a detailed description of the case study. It discusses both the historical and current higher education landscape under which the study was conducted. It also provides a detailed description of the structure of the Master's programme and student population from which respondents for the study were drawn.

## **Chapter Six: Data Analysis Procedures and Presentation of Findings**

This chapter outlines the data analysis procedures and presents the findings of the study. Class intervals were created for the podcast access logs to show which podcasts were downloaded the most and by which users. Constant Comparative Method of Coding - CCMC was used to identify common themes from interview data. The chapter also presents the findings of the study.

## **Chapter Seven: Discussion of Research Findings**

This chapter discusses the findings of the study. Podcast access logs show that general access patterns were the same for both the pilot and main study. Users accessed the podcasts either from the course site or through Really Simple Syndication - RSS feed. Students interviewed agree that podcasts are effective at supporting various learning activities and needs, including reflection.

## **Chapter Eight: Conclusion**

This chapter discusses the conclusions of the study. The study concludes that when well integrated into learning activities, podcasts mediate various forms of reflection, including descriptive, dialogic and critical reflection. The chapter also reviews the research questions and makes recommendations based on the findings and conclusions.

## 1.6 CHAPTER SUMMARY

This chapter presents an introduction to the dissertation. It has provided an overview of the challenges higher education institutions in Africa face. The chapter has also outlined the research topic, the research objectives and the necessity of the research undertaken, in addition to giving an outline of the dissertation. The next chapter discusses both the empirical and theoretical literature related to the study.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 INTRODUCTION

This chapter is comprised of two sections; section 1 reviews the literature on reflective learning in education, while section 2 reviews literature on podcasting. Studies have shown that reflection is a critical factor in achieving educational outcomes. Educators use various methods to mediate reflection in students. These include both teacher-led activities like question and answer sessions, classroom discussions and student-centred processes like individual and group activities. Increasingly, technology is used as one of many tools through which reflection can be mediated. In particular, podcasts have been shown to have cognitive benefits, increase the range and type of learning experiences and augment reflective experiences.

#### 2.1 REFLECTION IN EDUCATION

##### 2.1.1 Definition of Reflection

Reflection has been posited as an aid to learning, with various types and processes of reflection being proposed. Reflection is not a new concept in education literature. References to reflection are found in the works of eminent scholars from as far back as Dewey (1910). Derivative terms such as reflective learning, reflective practitioner (Schön, 1983, 1987) and critical reflection (Mezirow, 1998) have since emerged. Despite this, a common definition of reflection is yet to be agreed upon, as documented by Atkins and Murphy (1993) and Hatton and Smith (1995). Consequently, scholars' conceptualization of reflection lacks a shared understanding of what the term means. This led Hatton and Smith (1995, p. 1) to suggest 'that the terms are often ill-defined and ... used rather loosely to embrace a wide range of concepts and strategies. ...' In a similar vein, Norsworthy (2002) argued that this lack of a clear conceptualization of reflection handicaps the pedagogy of teacher academics. Boud, Keogh and Walker (1985, p. 19) have defined reflection as:

‘... a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations ...’

and Mezirow (1998) is of the view that:

‘Reflection, a "turning back" on experience, can mean many things: simple awareness of an object, event or state, including awareness of a perception, thought, feeling, disposition, intention, action, or of one's habits of doing these things’.

It can therefore be inferred that reflection is an activity consisting of processes and skills, the outcome of which is an altered conceptual perspective which impacts upon individual action and behaviour. In addition, reflection can either be an individual or collective activity (Tsang, 2007; Boud et al., 1985). Despite the lack of consensus regarding its definition, both classroom and practical experience become meaningful once reflected upon (Hedberg, 2009). For the purposes of this study, individual reflection took precedence over collective reflection, where reflection was defined as:

‘taking the unprocessed, raw material of experience and engaging with it to make sense of what has occurred... focusing on the thoughts and emotions that accompany them’ (Boud, 2001, p. 11).

### **2.1.2 Processes of Reflection**

Reflection has been posited as an activity composed of key stages or levels, ranging from three (Schön, 1991) to seven (Mezirow, 1981). Atkins and Murphy (1993) observe that despite differences in scholars’ classification of the stages of reflection, some similarities are evident. This makes it possible to develop a hierarchy of reflective processes. Both Schön’s and Mezirow’s stages of reflection begin with the awareness of inconsistency between one’s



knowledge and new experience. This results in an analysis of one's knowledge in light of the new, leading to an altered perspective incorporating prior and new knowledge. The second stage involves a critical analysis of one's knowledge in light of new experiences. This analysis may draw upon one's prior knowledge in explaining what is happening in a particular context. It can also quite possibly result in an explanation using new knowledge (Boud et al., 1985). Terms used to describe the process of critical analysis include; association, integration, validation and appropriation attributed to Boud et al. (1985), and conceptual, psychological and theoretical reflectivity attributed to Mezirow (1981). The third stage is the attainment of a different point of view of a particular context. Boud et al. (1985) have suggested that the outcomes of this stage are both cognitive and affective, which may or may not lead to modification in one's actions. Hedberg (2009, p. 11) argues that 'When we reflect, we give the learning a space to be processed, understood, and more likely integrated into future thoughts and actions'. This suggests that reflection should be an essential structured component of student learning activities.

### **2.1.3 Skills of Reflection**

From Boud et al.'s discussion, it can be inferred that for learning to be an outcome of reflection, there is need for engagement with certain skills. Murphy and Atkins (1993, p. 1190) have identified five skills namely self-awareness, description, critical analysis, synthesis and evaluation.

#### **Self-awareness**

According to Murphy and Atkins, self-awareness is a crucial element of reflection as it makes it possible for one to analyze feelings and thoughts. With self-awareness, one is able to scrutinize how experience and context affect each other. This leads to internal articulation of the situation or self dialogue.

#### **Description**

This involves the ability to accurately identify and recall the important details of particular experiences as well as give precise accounts, note Boud et al. (1985). One cannot describe to others what they are unable to articulate to themselves, so internal or self dialogue precedes external.

### Critical analysis

Critical analysis has also been referred to as critical evaluation by Strampel and Oliver (2007). This involves examining prior knowledge and its relevance in a particular context. It may require challenging long-held assumptions and exploring alternatives.

### Synthesis

This involves integrating new knowledge with prior knowledge. The outcome of synthesis is the development of different points of view, a broadening of one's perspective. With a broadened outlook, one has a greater range of knowledge and skills to work with when similar situations are encountered later.

### Evaluation

Evaluation involves the use of criteria and standards in decision-making. Together with synthesis, evaluation is central for the establishment of different points of view, observes Mezirow (1981).

Scanlan and Chernomas (1997) found that part of the difficulty in articulating reflection lies with the fact that some of the terms used to describe the skills and processes of reflection are the same, for example self-awareness and critical analysis. This would explain why the skills of reflection are implicit in most of the literature reviewed. It would also justify the lack of explicit help given in developing reflection in many educational programmes, observes Hatton and Smith (1995) and Atkins and Murphy (1993). Atkins and Murphy (1993, p. 1191) recommend that 'emphasis should be given to developing these skills in professional courses in order to facilitate the use of reflection as a learning tool'. This is important if maximum benefit is to be derived from reflection. As reflection enables students to process learning, there is greater engagement with content. Students are therefore more likely to draw upon it in subsequent thoughts and action. Podcasts can be used to scaffold argument articulation processes as they provide the opportunity for development of listening skills which are essential for critical discussion, a competency required of students in knowledge creation processes.

### 2.1.4 Types of Reflection

Hatton and Smith (1995) outlined a framework incorporating Schön's reflection-on-action and reflection-in-action (Schon, 1983, 1987), seen as reflection after and during an event respectively. Using the Hatton/Smith framework, it is possible to identify whether or not an individual is engaged in reflection and at what level. The framework has the ideal endpoint of reflection as the development in individuals, of the ability to undertake what corresponds to Schön's reflection-in-action. Reflection-in-action has been posited as the most difficult type of reflection to accomplish. The basic form of reflection, referred to as 'technical rationality' by Hatton and Smith (1995), involves examining situations in concrete terms. It leads to the highest form called 'contextualization of multiple perspectives'. Strampel and Oliver (2007) have argued that reflection starts with description and leads to critical analysis, with each form of reflection encouraging cognitive processing at different levels. Mediating high forms of reflection therefore enables students to better articulate their thoughts, leading to effective learning. The following are terms used to describe different forms of reflection and the features associated with each.

#### 1. Technical Rationality

Individuals interpret events and experiences from a personal perspective. Hedberg (2009) suggests that students are able to clarify their thinking, progressing to a deeper understanding of what has been learned. Technical rationality can therefore be regarded as reasoning based on application of disciplinary knowledge or rules and their interpretation.

#### 2. Reflection-on-action

This comprises three forms of reflection namely descriptive, dialogic and critical reflection. Hatton and Smith (1995) observe that individuals are preoccupied with addressing **task and impact** concerns (emphasis in original). Reflection-on-action ought to be mastered before individuals can achieve reflection-in-action. Ideally, the levels of reflection-on-action outlined below must be promoted early on as they form the foundation upon which reflection-in-action is developed.

##### Descriptive Reflection

Individuals involved in descriptive reflection are concerned with seeking instances of professional 'best practice'. Their reflection is personalistic, developmental and seeks social efficiency. With the help of peers, individuals are able to recognize different factors and

perspectives in a particular context. In academic contexts, students ‘return to the experience’ (Boud et al., 1985, p. 27), remembering what happened and their reactions at the time. This enables them to describe details of the event.

#### Dialogic Reflection

This is deliberative, cognitive and narrative by nature. Individuals actively weigh competing claims and viewpoints, exploring alternative solutions to what is their norm. Boud et al. (1985, p. 30) emphasize that students engaged in dialogic reflection can ‘re-evaluate’ their experience and use prior knowledge to shape their learning.

#### Critical Reflection

Individuals view as problematic, the goals and practices of their profession based on ethical criteria. They are able to draw upon multiple ideologies to question commonly held assumptions and beliefs. Hatton and Smith (1995) argue that at this stage of reflection, students critically analyze events and experiences, integrate multiple perspectives and base decisions on contextual appropriateness.

### 3. Reflection-in-action

This is the highest form of reflection which can be achieved. Hatton and Smith (1995) argue that individuals address **impact** concerns (emphasis in original). Boud (2001, p.13) indicates that this involves the ‘contextualization of multiple viewpoints’, with individuals drawing upon any of the forms of reflection-on-action while ‘noticing and intervening to interpret events and the effects of one’s interventions’.

The framework below, proposed by Hatton and Smith (1995), was used to identify instances of reflection in discussion with students. According to the Hatton/Smith framework, when students make no attempt to justify events or action, they are not engaged in reflection. They are simply recounting the event. They use the term ‘descriptive writing’ for this. Evidence of justification in argument formation is therefore what differentiates reflection from description.

Table 2.1.1: Framework for identifying reflection (Smith 1992, quoted in Hatton & Smith, 1995)

Type of Reflection	Features
<b>Descriptive writing</b>	<p>Not reflective</p> <p>Description of events which occurred/report of literature.</p> <p>No attempt is made to provide reasons/justification for events.</p>
<b>Descriptive reflection</b>	<p>Reflective</p> <p>Is not only a description of events but some attempt to provide reason/justification for events or actions but in a reportive or descriptive way.</p> <p>Recognition of alternate viewpoints in the research and literature which is reported.</p> <p>Is of two types:</p> <p><b>a.</b> Reflection based generally on one perspective or factor as rationale</p> <p><b>b.</b> Reflection is based on the recognition of multiple factors and perspectives.</p>
<b>Dialogic reflection</b>	<p>Demonstrates a ‘stepping back’ from the events /actions leading to a different level of mulling about, discourse with self and exploring the experience, events and actions using qualities of judgment and possible alternatives for explaining and hypothesizing.</p> <p>Is analytical and/or integrative of factors and perspectives and may recognize inconsistencies in attempting to provide rationales and critiques</p> <p>Is of two types:</p> <p><b>a.</b> Reflection is based generally on one perspective or factor as rationale</p> <p><b>b.</b> Reflection is based on the recognition of multiple factors and perspectives.</p>
<b>Critical reflection</b>	<p>Demonstrates awareness that actions and events are not only located in, and explicable by, reference to multiple perspectives but are located in, and influenced by, multiple historical and socio-political contexts.</p>

Students engaged in dialogic reflection do more than describe an event or experience; they are able to analyze the experience from more than a single perspective. Individuals are able to propose alternatives in providing a critique of actions or events. It is this ability to identify

alternative causes/solutions in actions and events that distinguishes high order reflection, such as dialogic or critical reflection from low order ones like descriptive reflection. Strampel and Oliver (2007) associate the various levels of reflection-on-action with specific cognitive processes; descriptive reflection draws on cognitive retrieval processes (remembering and understanding), dialogic reflection on the reconceptualization of knowledge (association, integration and appropriation) while critical reflection involves the application of new knowledge to a variety of situations.

### **2.1.5 Benefits of Reflection**

The benefits of encouraging students to reflect on their learning have been articulated by many. Daudelin (1996) suggests that through the process of articulating a problem, students are able to form a clear picture of the problem at hand. Daudelin adds that this enables them to discover what went right or wrong in a particular context. This widens the range of knowledge and skills students can draw upon in tackling similar problems, should they arise. Hatton and Smith (1995) argue that through critical reflection, students develop an awareness of how action and behaviour is influenced by multiple factors. This is supported by Daudelin (1996, p.39), who advises that ‘learning is the creation of meaning from past or current events that serves as a guide for future behaviour’. These benefits make it imperative for reflection to be modelled and mediated in education. Daudelin observes that reflection is the primary means through which effective learning takes place. Through reflection, students are able to effectively integrate prior knowledge and learning with new information. Nie, Cashmore and Cane, (2008) also argue that reflection has cognitive benefits, including the development of higher order information processing skills. Consequently, improving students’ reflective practices should result in positive effects on achieving learning outcomes. Another benefit attributed to reflection is self-critique, through which individuals identify their own learning needs and take the necessary steps to address them.

The literature reviewed in the previous section showed that improving students’ ability to reflect promotes learning. The literature also highlighted the fact that reflection enables students to effectively integrate prior knowledge with incoming information. Other cognitive benefits include the development of high order information processing skills. Consequently, improving student reflective practices should result in corresponding effects in achieving

learning objectives. The next section reviews literature on the educational uses of podcasting. It briefly describes the history of podcasting and outlines podcast use both within non-academic and academic contexts.

## 2. 2. PODCASTING

### 2.2.1 History of podcasting

The term podcasting is used to refer to the content (audio) as well as the process of producing and distributing it. Mason and Rennie (2008, p. 69) define a podcast as ‘an audio file which can be downloaded and listened to either on an iPod or MP3 player for mobile study, or a computer or laptop for location-based study’. This can be done in a library, residency room or other place where students are comfortable to work from. Typically, podcasts are in digital format because they are distributed via the Internet. ‘Podcast’ is an abridgement of broadcasting and iPod and was introduced by Ben Hammersley in an article he wrote for the Guardian<sup>1</sup> dated February 12, 2004. Hammersley explored the amateur production of audio programmes which could be downloaded to iPods and other MP3 players. Podcasts can now incorporate visual content, either as enhanced podcasts or video podcasts (vodcasts). Podcasts containing visual data, according to Mason and Rennie (2008), are useful for referring to visual material as well as for accompanying Power Point slides.

Though a fairly recent application, podcasting combines a range of technologies which have been available for some time. These include Really Simple Syndication - RSS feeds and multimedia files, using them in a single, unique package (Feinglos, 2005; Matthews, 2006). According to Matthews (2006), RSS feeds were initially used for publishing text-based news headlines over the Internet. Matthews further observes that Adam Curry suggested that the content could be of any format, text or otherwise. This resulted in the adaptation of RSS feeds for use with audio files, including podcasts. Matthews (2006) contends that Curry’s idea eventually led to the development of an application called iPodder. iPodder (now called Juice)<sup>2</sup> is a media aggregator which automatically downloads digital files to a personal computer or portable device. An aggregator is a website or computer software which gathers

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<sup>1</sup> <http://www.guardian.co.uk/media/2004/feb/12/broadcasting/digitalmedia>

<sup>2</sup> <http://juicereceiver.sourceforge.net>

information from multiple on-line sources using RSS feeds. Matthews (2006) adds that making the application available to other software developers led to the creation of a complete software package which could automatically update digital files. With the development of RSS 2.0, the most recent version of RSS specification, one can now subscribe to and automatically get subsequent episodes of the podcast without having to go on-line as long as one's Internet connection is active. Matthews (2006) observes that it was Curry's reasoning that because the Internet was already being used to download music, this would lead to a natural progression to the download of other audio files for play back on MP3 devices. Rosell-Aquilar (2007) contends that podcasting technologies have two main potential uses, namely the creation and utilization of podcast resources. Rosell-Aquilar adds that podcasting has rapidly diffused into education because play back devices including portable media players such as iPods, MP3 players and computers are already owned by students.

### **2.2.2 Advantages of Using Podcasting over Other Forms of Audio Media**

The following are some of the advantages of using podcasting as a resource for enhancing teaching and learning over other audio resources such as radio and audio cassettes (see Frydenberg, 2006; Rosell-Aquilar, 2007; Manning, 2005; Mason & Rennie, 2008).

- The ability of replaying content at listeners' discretion;
- Flexibility and portability of resources enabling easy accessibility;
- Opportunity offered for student-generated content;
- Wide range of applications, including the provision of pre-session to post-session materials;
- Suitability of audio for categories of special needs students, for example, distance or visually impaired students;
- A more cost-effective and low-barrier resource for both students and academic staff;
- Can be employed to make productive use of students' 'dead time'.



While listening to a podcast, students actively associate what they already know with what they are engaging with. Podcasts can therefore mediate reflection by prompting memory. Giving students the option of listening to lecture podcasts enables them to reflect without the distractions associated with face-to-face sessions, including note-taking. Podcasts also enable commuting students to productively utilize time as they move from home to campus and vice versa.

### 2.2.3 Current General Uses of Podcasting

Major television and radio networks and newspapers offer podcasts of either whole or edited versions of their leading news programmes. This is in addition to selected entertainment and current affairs programmes. The primary reason for doing so is to supplement news coverage as timeslots limit how much content networks can distribute live on television or radio. Many networks offer podcasts. Among them is the British Broadcasting Corporation - BBC, which has podcasts of programmes available on radio. These programmes include dramas, music and sports<sup>3</sup>, with the broadcaster reporting downloads of about four million since the first BBC podcasts were published in August 2006. Another is the Cable News Network - CNN, which publishes an assortment of podcasts. CNN podcasts cover business, education and entertainment, comedy and health, sports, ICTs and travel<sup>4</sup> programmes. The Guardian Unlimited provides newspaper podcasts which include reviews of political issues, films, science, sports and the theatre<sup>5</sup>, while Timeson-line newspaper podcasts cover the arts and comedy, music and sport<sup>6</sup>. The American sports network Entertainment and Sports Programming Network - ESPN publishes podcasts of its daily radio shows<sup>7</sup>.

Other applications of podcasts include enabling visitors to museums and tourists take virtual tours, in addition to visiting popular sites in person. The cities of San Francisco<sup>8</sup> and Philadelphia<sup>9</sup> publish 'soundseeing' podcasts as does the Seattle Art Museum<sup>10</sup>. Businesses

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<sup>3</sup> <http://bbc.podcast.com/>

<sup>4</sup> <http://www.cnn.com/services/podcasting/>

<sup>5</sup> <http://www.guardian.co.uk/podcasts>

<sup>6</sup> [http://www.timesonline.co.uk/tol/tools\\_and\\_services/podcasts/](http://www.timesonline.co.uk/tol/tools_and_services/podcasts/)

<sup>7</sup> <http://sports.espn.go.com/espnradio/podcast/index>

<sup>8</sup> <http://www.podcast.net/show/510>

<sup>9</sup> <http://necc.dmit.asu.edu>

<sup>10</sup> <http://www.artagogo.com/>

use podcasts for marketing and recruitment purposes and continuing professional development of employees across a wide range of disciplines.

#### **2.2.4 Podcasting in Education**

Podcasting is about making media files available over the Internet for an audience that wants to use them, when they want, where they want, and how they want to. Podcasting is a technology which can be used in a variety of ways to address current and future educational needs. These include but are not restricted to; reinforcing what is covered in lectures, giving students who miss class the opportunity to catch up, increasing access to educational resources and equipping graduates for a knowledge-driven economy. Commercially produced educational podcasts are now available in different disciplines. This is in addition to podcasts produced by lecturers and students at various institutions of learning. Most lecturers and institutions make their podcasts freely available as open educational resources. These resources can be used by anyone with Internet connection without having to pay for them or register with the institution. Examples of such institutions are Massachusetts Institute of Technology - MIT and the University of Michigan. In higher education, podcasts are used for both non-academic and academic purposes.

##### **Non-academic Uses in Higher Education**

Podcasting is currently used both within and out of the classroom. Out of classroom uses include: supporting new students during campus orientation activities, preparing international students for life in a different country, career guidance, entertainment, student recruitment, provision of information on the wider campus community as well as staff development and training. Podcasts can be used for a variety of purposes in student affairs as a way of communicating with students, according to Brown (2006). Brown's reasons for using podcasting in student affairs are varied and include; providing information to students in a format they are already accustomed to, a means of professional training for students and staff, the quick learning curve proffered by podcasting's easy to use technology, the novelty of the technology and students' familiarity with podcast technology.

Duke University brought podcasting as an educational technology into prominence when podcast use across a range of disciplines was initiated in 2004. The university provided 20 gigabyte iPods to all first year students pre-loaded with orientation material and also made available other resources for download from the university server. Examples of other universities using podcasts in student affairs are: Hass Business School at University of California at Berkeley<sup>11</sup>, which produces podcasts for both local and international Masters of Business Administration students containing information about the programme and financial aid options for those in need of financial assistance, Hong Kong University's Campus Beat<sup>12</sup>, a student-produced podcast about the happenings at the university, and the University of Leicester<sup>13</sup> podcasts aimed at assisting first year students with settling in higher education. Miami University<sup>14</sup>, North Carolina State University<sup>15</sup> and Webster University<sup>16</sup> have published podcasts of interviews with recruitment professionals who give advice on topics such as job-search techniques and appropriate attire for interviews.

Other universities publish podcasts providing news and information about the university like the University of Connecticut Waterbury campus<sup>17</sup>. Some focus on podcasts unrelated to the typical student affairs domain, such as Claremont Graduate University<sup>18</sup>, which publishes a musical podcast produced by the head of its music department and a short history of the university and Ohio State University<sup>19</sup> which discusses the latest trends in ICTs in its podcasts. Though not directly related to curriculum content, these podcasts provide an informal space through which students can interact with content, which helps the process of internalization.

#### Academic Uses in Higher Education

Podcasts can be used for general educational purposes to communicate curriculum, assignments and other information to parents, while specific uses include demonstrating skills

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<sup>11</sup> <http://mba.haas.berkeley.edu/0>

<sup>12</sup> <http://www.podcastdirectory.com/podcasts/35897>

<sup>13</sup> <http://www.le.ac.uk/beyonddistance/startinguni/>

<sup>14</sup> <http://www.units.muohio.edu/careers/podcast/>

<sup>15</sup> <http://www.ncsu.edu/career/careertalk/index.php>

<sup>16</sup> <http://webster.edu/homecampus/homes/careertalk.html>

<sup>17</sup> [http://waterbury.uconn.edu/student\\_resources/podcasts.html](http://waterbury.uconn.edu/student_resources/podcasts.html)

<sup>18</sup> <http://www.cgu.edu/cgupodcasts>

<sup>19</sup> <http://www.ohiou.edu/aac/lab/techies>

or strategies, recording class events for further learning or reflection, book discussions, debates, performances, interviews, vocabulary instructions, test reviews, data gathering and tutorials. Podcasts can be used in varying ways including the provision of core curriculum content, recordings of lectures and pre-class listening content, additional or supplemental course related content. Podcasts also give students access to multimedia content and can be produced as student assignments, presentations and projects in addition to being used for evaluation purposes. Following Duke University's lead, many North American universities begun providing podcasts, as did institutions in Europe and Australia. In the United Kingdom, podcasting pioneers include Coventry University and the University of Wales, Aberystwyth. Most universities publish podcasts on their Learning Management Systems - LMSs, which all registered students have access to. Some give students the option of subscribing to RSS feeds and downloading the podcasts to a play back device of their choice.

Edirisingha et al. (2007) and Säljö (1998) argue that Web 2.0 like writing before, will change the way we communicate, and consequently the way we use our cognitive abilities and learn. Säljö asserts that technology increases the range and type of learning experiences, especially for complex and abstract concepts. Säljö (1998, p. 159) adds that by virtue of its interactive nature, modern technology has great potential to support 'reasoning by amplifying the nature and boundaries of scientific models of objects and events'. McGarr (2009) concludes that the way podcasting is used in institutions is determined by the way it is perceived both by academics and students, with podcasting in turn being influenced by the dominant pedagogies used in particular educational contexts.

### **2.2.5 Types of Podcasts**

Podcasts are broadly classified as either providing information or learning activities. Each has its own associated categories.

#### **Information aspect**

Campf and Gallagher (2008) propose three categories depending on the nature of the content and how it is to be used. These are: 1) distribution of lecture archives, 2) delivery of supplemental material given either before or after a lecture as a means of introducing content to be covered later, or providing summaries of content already covered for purposes of

review, revision or consolidation respectively, and 3) assignments of student-created podcasts. Rüdel (2007) on the other hand, proposes four types of podcasts depending upon the content being delivered to students. These are: 1) traditional course content such as archives of lectures delivered face-to-face, 2) additional course content which enhances learning by providing material that is relevant to the course, 3) supplemental course content not crucial to passing examinations, and 4) podcasts containing content from students for the lecturer or other students. However one chooses to classify them, Manning (2005) argues that podcasts enable academics to provide on-line content in formats which are not text-based.

Lecture archives involve recording whole lectures, which students can access later for review at their convenience. These are simple enough to be created with limited resources: a personal computer, a digital audio recording device, file conversion and sound editing software. Copley (2007) and McGarr (2009) observe that recording lectures has become routine at most overseas universities, and appears to be the most common way of using podcasting at many institutions. Lecture archives can be integrated with other on-line resources to provide students with richer, multimedia content. Universities providing lecture archives include: the American University Washington College of Law, Berkeley University, California Polytechnic State University, Cambridge University, University of Canterbury, Coventry University, Duke University, Georgia College and State University, Harvard Extension School, University of Michigan School of Dentistry, the University of New England, Oxford University, Princeton University, Purdue University, the Royal Melbourne Institute of Technology - RMIT University, University of Wales Aberystwyth and the University of Washington.

According to Umar, reporting for Independent On-line - IOL Technology<sup>20</sup>, the University of KwaZulu - Natal became the first South African and only African higher education institution to introduce institution-wide podcasting. The university began making lectures, other teaching aids and presentations available for download onto students' devices including cellphones, iPods and handhelds in 2009. The R1 million initiative was a result of the partnership between UKZN Innovation, the university's School of Information Systems and Technology - IS&T, the university's Research Office and the Core Group. At launch, it was

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<sup>20</sup> [http://www.ioltechnology.co.za/article\\_page.php?iArticleId=5039800#](http://www.ioltechnology.co.za/article_page.php?iArticleId=5039800#)

hoped that UKZN students' learning experiences would be deepened by having access to digital content for review at a time and place of their choosing. The School of IS&T<sup>21</sup> would provide podcast support to other schools requesting it.

Podcasts have been shown to mediate the development of various skills and competencies, including critical discussion. According to Deal (2007, p. 11), the podcast production process acts as a channel for students to engage in 'critical discussion'. Giving students the opportunity to produce podcasts leads to the development of listening and presentation skills, in addition to technical competence in podcast production. The podcast production process also raises awareness regarding how socio-cultural interactions are affected by ICTs. Involving students in the podcast creation process therefore leads to greater engagement with and better understanding of content. Other benefits attributed to involvement in podcast production include '... developing teamworking, organization and other transferable skills ...' contend Cane and Cashmore (2008, p. 152). It can therefore be inferred from Deal (2007) and Cane and Cashmore (2008) that podcasts mediate the acquisition and development of various skills and competencies which are critical in the argument articulation processes that lead to the achievement of educational objectives.

Institutions providing student-created podcasts include Duke University, California Polytechnic State University, Drexel University, the University of Connecticut, Charles Sturt University and Bentley College. The following examples are taken from Deal (2007), Frydenberg (2006), McLoughlin and Lee (2007), Rüdell (2007) and Edirisingha and Salmon (2007); Duke University publishes musical podcasts showcasing students' musical and theatrical works; California Polytechnic State University provides student-created podcasts across a range of disciplines, including languages and Web development; Drexel University students are required to record study group sessions and interviews, as well as maintaining audio-blogs as a way of staying in touch with their peers and administrators during their work experience semester. Informal student discussions exploring in greater detail the previous week's lectures are published in a General Psychology course at the University of Connecticut; second year students at Charles Sturt University produce talkback radio-style podcasts to assist first year students enrolled on an Information Technology unit, and their

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<sup>21</sup> <http://is.ukzn.ac.za/UKZNpromotesPodcasting.aspx>

colleagues enrolled on an Introductory Information Systems course at Bentley College produce vodcasts aimed at teaching their peers topics based on course material.

Student-created podcasts have proved useful in learning foreign languages, or in instances where students are instructed in a language other than their home language, as has been shown at Matsuyama Shinonome College in Japan. Students of English as a Foreign Language course record discussions in which they explain proverbs in English and their native language, while their counterparts at Hong Kong University write news items for publishing on the institution's magazine podcast with the aim of becoming critical readers of English, which serves as an introduction to writing and in different styles in English language. Swarthmore College students produce two five-minute podcasts as assignments for an English Literature course. In producing their podcasts, students use their creativity, plan thoughtfully and critically, skills which can be used both in and out of educational contexts. The podcast production process thus mediates the acquisition of various skills and competencies, including creativity, planning and critical thinking. Additionally, lecturers who encourage student-created podcasts follow Constructivist principles which emphasize active student involvement in knowledge acquisition and construction processes.

#### Learning activity

Learning activities making use of podcasts are classified into three categories, depending on what students are expected to be engaged in while using the podcast. Rüdel (2007) provides a list of learning activities which students may be engaged in while using podcasts: listening only, listening and looking and listening, looking and doing.

1. Podcasts which require students to listen only can be used to provide students with material or content of talks, discussions and interviews by/with experts in specific fields, scenes from films, and natural sounds such as heartbeats of patients with various conditions contrasted with normal heartbeat.
2. Those requiring students to listen and look can either be enhanced podcasts, vodcasts or audio podcasts used together with printed content such as lecture notes or Power Point slides, as well as images.
3. Podcasts requiring students to listen, look and perform a task may engage the students in playing and pausing the podcast in order to take down notes, conduct some practical activity such as working with equipment and/or apparatus, or even

interact with others. Comments or further instructions can be supplied once playback is resumed.

### 2.2.6 Why Use Podcasts

Proponents of podcasting in education have called for using the technology in ways that encourage innovation based on sound pedagogy, rather than fitting it into the traditional teaching and learning paradigm. McLoughlin and Lee (2007) have called for a move away ‘... from didactic modes of teaching and transmission of content, to enable greater learner agency in the learning process ...’ which encourage passivity in students. McLoughlin and Lee encourage users of podcasting to go beyond ‘merely’ delivering lecture content via lecture podcasts, but to rather use podcasts as a tool to enable greater self-regulation by students, while Popova and Kirschner (2007) contend that podcasts ‘should serve a pedagogical objective or require a dedicated pedagogy’. This suggests that using podcasting in ways in which the students do more than listen to podcasts provides opportunity for deeper engagement with content, leading to better learning outcomes. McLoughlin, Lee and Chan (2006) have shown that the podcast creation process offers students reflective experiences which augment reflection and metacognition.

Edirisingha et al. (2007, p. 3) suggest that for podcasts to be widely adopted, ‘... empirically grounded, theoretically informed models of using podcasts to address the disciplinary and context-specific teaching and learning challenges ...’ is required. Considering pedagogy before podcasting has been shown by the IMPALA project<sup>22</sup> to be significant in improving learning. The IMPALA project conducted research into podcast development and use in specific higher education contexts. The project proposed a ten-factor podcast development model, providing suggestions on how to best integrate podcasting in the curriculum based on empirical studies conducted at various participating universities (Edirisingha et al., 2007; IMPALA project, 2006). Deal (2007, p. 12) has advocated using podcasts in ways which ‘help the instructor and students reach their educational goals, by facilitating thoughtful, engaging learning activities that are designed to work in support of those goals’.

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<sup>22</sup> <http://www.impala.ac.uk/>



Data on evaluation of podcasting in higher education institutions is scarce, despite the large number of institutions using them for academic purposes. Institutions that have so far conducted evaluations include University of Canterbury, New Zealand; Duke University; University of Southern California and University of Washington. Initial findings from these evaluations indicate that students value both lecture archives and supplemental podcasts. Students have reported advantages such as positive effects on their grades, having control of where, when and how to replay the podcasts and providing a richer student-centred learning experience, though they report a steeper learning curve with supplemental podcasts, as noted by Bell, Cockburn, Wingkvist, and Green (2007).

Paradoxically, evaluation studies indicate that students prefer using personal computers or laptops to listen to podcasts, despite the rise in portable MP3 devices (Brittain et al., 2006; Edirisingha & Salmon, 2007; Lane, 2006a, 2006b; Matthews, 2006). Mason and Rennie (2008, p. 73) suggest that using podcasts usually requires one to be ‘in a static place in order to take full notes, at least for the first time of listening’. Of greater significance is McGarr’s (2009) finding that contrary to early assumptions, podcasting appears not to have had negative effects on lecture attendance, corroborating findings by Bongey, Cizadlo, and Kalnbach, (2006) and Frydenberg, (2006).

### **2.2.7 Podcasting for Academic Purposes**

Strampel and Oliver (2007) have concluded that technology in general can be used to mediate reflection when implemented properly. They propose three elements that need to be present in order for reflection to be effectively mediated in the learning environment, one of which is learning resources. Podcasting has been used as a learning resource in a variety of ways in higher education, ranging from providing students with access to full lectures, pre-lecture material and as an alternative strategy of providing feedback to students and supporting distance education students. Aliotta, Bates, Brunton and Stevens (2008) showed that podcasts can be used to successfully address student misconceptions in undergraduate Physics, resulting in improved learning in a subject viewed as difficult. Aliotta et al. (2008) concluded that podcast content should be ‘targeted to the relevant course material’, highlighting the need for seamlessly integrating podcasts with both curriculum and pedagogy.

Most universities have extensive on-line course components, necessitating the need for integrating new technologies into these courses. The University of Leicester conducted a pilot study on how to best integrate podcasts into on-line learning for 3<sup>rd</sup> and 4<sup>th</sup> year Engineering students (Mason & Rennie, 2008; Fothergill, 2008). Podcasts meant to supplement on-line course content were posted on the on-line learning environment. The podcasts were made up of updates to on-line content, guidance on weekly activities, news items and jokes. Some of the lessons emerging from the Leicester evaluation, according to Mason and Rennie (2008, p. 73) is the need for the podcasts to ‘... have strong links to other activities and resources, ... include up to date news and feedback’. Podcasts have also been used to provide effective feedback to students, as illustrated by France and Ribchester (2008). In a study conducted at the University of Chester, they conclude that:

‘podcasts have the potential to increase the detail and accessibility of assessment feedback, provide commentaries...more personalized and understandable, and encourage deeper engagement with the feedback information’ (2008, p. 78).

Podcasts have also been shown to enhance learning in distance education courses. Fernandez, Simo and Sallen (2009) conclude that podcasts are a powerful complement to traditional resources, make distance education less impersonal by increasing students’ sense of connectedness with peers and lecturers, and enable utilization of a wide range of student skills and learning methods. Fernandez et al. (2009) add that this transforms learning by increasing the range and type of students’ learning experiences.

### **2.2.8 A Tool for Reflection**

Boud and Walker (1998) note that learning has been facilitated more effectively since reflection and the promotion of reflective practice were incorporated into educational programmes. They add that reflection is highly context-specific, with socio-cultural contexts exerting a powerful influence over what kinds of reflection it is possible to promote, and ways in which this might be achieved. Atkins and Murphy (1993) argue that reflection is an important component of the learning process. They add that students need specific cognitive

and affective skills for them to be able to successfully use reflection to improve their learning.

According to Daudelin (1996), reflection is an important part of effective learning as it makes students aware of their trail of reasoning in the learning process. Reflection involves the process of turning experience into learning; learning which occurs as the student engages with content. Ng'ambi (2008, p. 134) proposes that podcasts can be used for scaffolding student learning by using 'questions as drivers of reflective learning'. He further suggests that podcasts can support reflection by providing students with 'relevant cues' which enable them to complete activities associated with specific tasks. This echoes Popova and Kirschner (2007), who emphasize that students' cognitive processes can be stimulated via questioning or discussion by using '*primer podcasts posing epistemic questions*' (emphasis in original). These questions can be used to provide the right amount of scaffolding in the learning environment. Dabbagh (2003) discusses approaches which can be used for scaffolding. These include offering resources and activities that provide students with questions for critical thinking and scenarios emphasizing multiple perspectives which call for analytical thinking as a way of promoting reflection.

Podcasting can therefore be used as one of the tools students use to mediate reflection through the creation of personal reflective spaces. Students can engage with content without the limitations imposed by language and gaps in knowledge construction brought about by engaging in multiple activities while in lectures. These personal spaces provide scaffolding for argument articulation processes, empowering students in knowledge production processes. Ally (2004) raises the importance of giving students both opportunity and adequate time to reflect. Ally (2004, p. 20) suggests that questions be used 'to encourage learners to reflect on and process the information in a relevant and meaningful manner. ...' These questions should help the meaning making process upon which the achievement of learning outcomes hinges. Popova and Kirschner (2007) propose providing podcasts containing questions designed to prime students' metacognition, what they refer to as 'stimulating students to reflect on what they are studying and learning'. Popova and Kirschner suggest using podcasts containing questions which prompt and guide students to stimulate reflection as a means by which they can refine and externalize cognition. In this

way, students can reflect on particular learning experiences and how they can learn more effectively, ultimately participating in discursive knowledge production activities at a deeper level. What Ally (2004) and Popova and Kirschner (2007) are stressing here is that in order for reflection to be mediated (whether students use podcasts or not), student tasks should contain questions which guide them.

Different types of podcasts can be used to promote specific types of reflection. For purposes of this study, podcasts are classified into three, namely:

1. lecture archives, which include audio or video podcasts of scheduled class activities such as lectures or seminars;
2. supplemental material, either audio or video content delivered outside of scheduled class activities like lectures and seminars; and
3. student-created podcasts (student content created either during or outside of scheduled class activities).

Lecture archives could be used by educators aiming to improve students' ability to remember facts or describe events as audio only is suitable for this purpose. Lecture archives are thus ideal in achieving learning outcomes requiring the recall of facts or description of events. Promotion of higher forms of reflection can also benefit from lecture archives, though more creative uses of podcasts, including student-created ones are better at engendering deeper engagement with content. The researcher proposed table 2.2.2 below as a framework for using podcasts to mediate reflection. It summarizes the forms of reflection and the types of podcasts which could be used to mediate each. The framework looks at reflection-on-action proposed by Hatton and Smith (1995).

Table 2.2.2: Type of reflection and podcasts promoting each (based on Hatton & Smith, 1995 and Campf & Gallagher, 2008)

Type of reflection on action	Features of reflection	Suitable podcast
<b>Descriptive reflection</b>	Description of action/events  Reason/justification for events given, but in a reportive or descriptive way  Alternative viewpoints in research and literature provided	Lecture archives
<b>Dialogic reflection</b>	Demonstrates dialogue with self  Rationales and critique provided in explaining actions/events  Is analytical/integrative by nature	Lecture archives, supplemental material
<b>Critical reflection</b>	Demonstrates awareness that actions/events are located in, and influenced by multiple historical and socio-political contexts	Lecture archives, supplemental material, student-created podcasts

Though lecture archives may not necessarily encourage students to engage in the critical and creative activities characterizing reflection, they are nonetheless useful in instances where tasks draw upon low order skills such as recall of facts and events. Strampel and Oliver (2007) propose that this type of reflection relies on cognitive retrieval and equate it with dialogic reflection. Lecture archives thus have a role to play in enabling students achieve learning outcomes. This is because lecture archives give students the opportunity to revisit lectures, encouraging cognitive retrieval processes such as remembering and understanding.

Of student-created podcasts, those created outside of scheduled class activities have been shown to lead to more effective learning. Students have more time to engage with content at a deeper level and are thus able to reflect better on exactly what will go into the podcast. This is illustrated in studies conducted by Deal (2007), Frydenberg (2006) and Nie et al. (2008). This is because the creation of a new product or idea encourages students to apply knowledge (Strampel & Oliver, 2007). They argue that this is because students critically analyze events or experiences and are able to come up with appropriate courses of action. Student-created

podcasts are thus ideal in mediating critical reflection as the production process gives them the opportunity to evaluate an event, which is critical in developing a new perspective. Strampel and Oliver (2007) also propose that dialogic reflection is synonymous with conceptual change. Reconceptualization can thus be mediated by all types of podcasts, including lecture archives, supplemental podcasts and student-created ones. Podcasts are also well suited for use in Constructivist learning environments as they enable active student involvement in knowledge acquisition and construction processes.

Salmon (2002) underscores the importance of context in promoting reflection in students. She illustrated that Computer Mediated Communication - CMC has numerous affordances in mediating the development of reflective skills. Salmon (2002) adds that the nature of reflection supported by ICTs differs from reflection aided by traditional methods and concludes that opportunities for reflection need to be incorporated into courses. An advantage of podcasts over resources like textbooks and notebooks is that the files are inconspicuous and easy to carry, so they can be used by students anywhere and anytime. This inconspicuousness and ease of carrying make podcasts a more effective reflective resource than usual types which require students to be at a particular location at a specific time, for example journals, diaries or log entries.

## **2.3 CHAPTER SUMMARY**

This chapter has provided a review of the literature on reflection in education and podcasting. Literature has shown that improving students' ability to reflect promotes learning. Also highlighted in literature reviewed is that effective integration of prior knowledge with new information is the result of reflection. Literature has shown that students benefit from using podcasts. This includes using their creativity to plan carefully and critically, activities which mediate reflection. The next chapter looks at learning from the constructivist perspective and the implications this poses for learning. Proponents of Constructivism argue that giving students the opportunity to reflect on learning leads to better learning outcomes. Podcasts are one of the ways in which students can be given the opportunity to improve reflective practices, with corresponding effects in achieving learning outcomes. The next chapter also outlines Structuration Theory - ST and how it has been used to explain technology use in

general. Structuration Theory provides a basis for explaining the choices students make toward achieving learning outcomes, including which resources to use in mediating learning in general and reflection in particular. This theory posits action as the result of the influence of the social structures students bring to the learning context.

## **CHAPTER THREE**

### **THEORETICAL UNDERPINNING**

#### **3.0 INTRODUCTION**

This chapter discusses the theoretical perspectives underpinning the study. The chapter has two sections. The first section explores learning from the Constructivist philosophical perspective, while the second outlines Structuration Theory and how it has been used to explain technology use in general.

#### **3.1 CONSTRUCTIVISM**

The notions of knowledge acquisition and construction have been articulated by many scholars, including Mayes and de Freitas (2004), Phillips (1995) and von Glasersfeld (1989). Most emphasize the centrality of cultural and social factors in cognitive development. Constructivism is a set of concepts regarding human learning tracing its roots to eminent scholars including Dewey, Piaget and Vygotsky. Perkins (1999) argues that because Constructivism is a composite of different views incorporating active, social and creative aspects of learning, different kinds of knowledge are elicited from different constructive perspectives and there is thus no single constructive approach. The study was guided by two Constructivist principles: 1) giving students the opportunity to reflect on learning, and 2) the importance of active student involvement in knowledge acquisition and construction.

##### **3.1.1 Learning from the Constructivist Perspective**

Constructivism positions learning as the active construction of knowledge structures through experience. Campbell (2008, p.75) quoting Merriam and Caffarella (2001), defines Constructivism as ‘... an array of perspectives, posits that learners construct their own knowledge from their experiences. The cognitive process of making meaning is emphasized as both an individual mental activity and a social interactive interchange’. Campbell (2008, p. 5) adds that Merriam and Caffarella have managed to advance ‘... a well articulated teaching



philosophy ...’ with a range of application in various learning contexts. Mayes and de Freitas (2004) posit learning in the Constructivist school of thought as the realization of understanding through active discovery, dialogue and collaboration. Reflection is the means through which understanding is achieved. It is therefore important to give tasks which prompt reflection. Questions can be used to mediate the types of reflection proposed in table 2.2.2 of Chapter 2. Mayes and de Freitas (2004) argue that the primary concern of Constructivism is the internalization of knowledge and skills, their integration into existing structures and the effect of support on their emergence. Thus, students’ existing structures are affected by and altered by new knowledge and skills. When students are interrogating academic material, they use what they know to help them understand what they need to learn.

Atherton (2005) argues that the ‘learner is much more actively involved in a **joint enterprise with the teacher of creating** ("constructing") **new meanings**’ (emphasis in original). Atherton adds that Constructivism’s emphasis on students’ prior knowledge and understanding can benefit higher education, particularly in the areas of resistance to learning and learning through reflection as reflective practices are premised on Constructivist principles. Within Constructivist environments, the role of academics is to initiate discourse, with the primary objective of helping students to reach understanding (Atherton, 2005). Perkins (1999, p. 11) suggests that in Constructivism, ‘Active learning is the common denominator’. This is in agreement with Hung (2001, p. 282), who observes that the different Constructivist perspectives hold that ‘learning is an active process of constructing knowledge rather than acquiring knowledge’. Hung suggests that the key concepts underlying Constructivism are personal discovery, usually from first principles, the uncovering of alternative perspectives and making sense of them. These concepts are quite problematic to achieve in learning environments which assume that learning is the transmission of knowledge to students. Kanuka and Anderson (1999) identify at least four Constructivist positions, whose common themes they summarized as follows:

- new knowledge is built upon the foundation of previous learning;
- learning is an active rather than a passive process;
- language is an important component of the learning process; and
- the learning environment should be learner-centric.

Phillips (1995) summarizes how human beings acquire knowledge and understanding from the Constructivist philosophy. He does so by considering three distinct aspects of Constructivism, namely the active acquisition of knowledge and understanding, social construction of knowledge and understanding and finally, the creation/recreation of knowledge and understanding. In other words, knowledge and understanding are actively created and recreated within particular social contexts.

In the present study, students were required to write a reflective journal at the end of face-to-face sessions each day. This gave students the opportunity to reflect on their learning. Students were also involved in the podcast production process by presenting reports after each group activity. This was in addition to individual audio reflections at the beginning or end of each face-to-face session. These activities were learner-centric and enabled students to be actively involved in the creation of knowledge.

### **3.1.2 Implications for Teaching and Learning**

Constructivism stresses the importance of active knowledge construction, integration of new and prior knowledge and skills, as well as the provision of opportunities for reflection. This involves extending learning beyond formal learning spaces such as class period, lecture halls and educational institutions into informal ones. Students activities need to be designed so as to enable them to actively acquire knowledge and skills. Student activities should incorporate dialogue and interaction, as well as support from academics in order to allow ‘... facilitation and scaffolds ...’ as suggested by Hung (2001). Opportunities for reflection, suggest Kanuka and Anderson (1999) should be built into activities as these assist with ‘reflection about new experiences, how those experiences compare to their current understandings, and how different understandings might provide learners with improved understandings’. Examples of pedagogic approaches employing Constructivist tenets, according to Beetham and Sharpe (2007) include; Constructivist learning environments, computer supported collaborating learning, Cognitive scaffolding, research- and problem-based learning. Some instructional methods facilitating Constructivist learning principles suggested by Kanuka and Anderson (1999) include debate, case method and brainstorming. The teaching strategies used on the

module which the study reports on include individual reflective blogs, group discussions and activities.

Constructivist philosophy proposes that learning takes place whether students draw from personal experience or follow instructions from a manual or guidebook. In both instances, students construct knowledge structures based on their experiences. Von Glasersfeld (1989) suggests that students take greater responsibility for their learning, highlighting the importance of active involvement in the learning process. Von Glasersfeld emphasizes that knowledge acquisition and construction is not innate but is based on individual understanding. He adds that students therefore search for meaning from experience, thus underscoring the importance of active participation in learning. This is in contrast with philosophies underpinning traditional teaching and learning pedagogies, which encourage knowledge transmission rather than knowledge construction. Liu and Matthews (2005, p. 387) agree with von Glasersfeld, arguing that ‘... knowledge is not mechanically acquired, but actively constructed within the constraints and offerings of the learning environment. ...’ Constructivism thus necessitates a shift in educational practice. Podcasts can be used to foster knowledge acquisition as they encourage active participation, especially when students are involved in the production process.

This shift in educational practice calls for the revision of the role played by academics in the teaching and learning process. Academics are required to function as facilitators rather than as instructors, proposes Hung (2001), while Duffy and Cunningham (1996) recommend students be allowed to construct knowledge, rather than being handed everything through instruction. Ally (2001, p. 19) advocates for active learning, asserting that ‘doing meaningful activities results in high-level processing, which facilitates the creation of personalized meaning’. Ally highlights the importance of allowing students to contextualize and appropriate information for themselves. One way of doing this is by using carefully designed and focussed activities which prompt and promote reflection as students complete them.

This section has looked at learning from the Constructivist perspective and the roles students and educators take in Constructivist learning environments. The next section provides a

discussion of Structuration Theory - ST and some of its applications in technology-rich environments. Constructivism explains how learning takes place, while Structuration Theory looks at how social structures exert influence in actions students take in mediating learning in general. It is these structures which determine whether a student will rely on notes taken during lectures to mediate reflection, or whether they use alternative means, such as podcasts to do so.

## 3.2 STRUCTURATION THEORY

### 3.2.1 Basic Assumptions of Structuration Theory

Structuration Theory is a theory advocated by Giddens (1984), with the aim of bringing an end to the structure-agency dualism debate. The theory's main purpose is to highlight the role of agency in human action without overlooking the importance of the structural components of social institutions by stressing the inter-dependence of the two. Giddens (1977) proposed that in order for one to understand any social system, there is need to examine its elements, namely structure, modality and interaction. Graaff (2001, p. 9), defines structure as '... a regular pattern of behaviour in society ...' while Giddens (1977, p. 118) refers to structure as 'regenerative rules and resources that are both applied in and constituted out of action'. These elements govern human action and regulate the ability to deploy and use resources at one's disposal. Individual action draws upon these rules and resources resulting in the stability or transformation of structures. Structuration is defined as 'the structuring of social relations across space and time, in virtue of the duality of structure' Giddens (1984, p. 376). Put simply, Structuration is the set of conditions which determine how society is ordered and re-ordered over time. In academic contexts, this set of conditions is altered when new learning resources are introduced. These resources may in turn change the way students use traditional resources.

#### The Duality of Structure

Central to the theory of Structuration is the duality of structure. Giddens (1979, p. 5) refers to the notion of duality of structure as 'the essential recursiveness of social life as constituted in social practices. ...' Giddens posits action and structure as aspects of the same whole rather than separate entities.

## Types of Structure

Giddens (1977, p. 132-133) proposes that Structuration is comprised of ‘three elements: the communication of meaning, the exercise of power, and the evaluative judgment of conduct’. These elements are inter-related and together, regulate and reinforce social systems. Giddens focuses on meaning, power and norms and their interplay within particular contexts, regulating patterns of behaviour. Modality refers to the ways by which structures are translated into action, while interaction is any activity instantiated by a human agent acting within the confines of a social system (Giddens, 1977). Structure is created by individuals through socially-situated action. Through these modalities, social structures enable communication to take place within social settings, are responsible for sanctioning action and interaction as well as exerting power over human agency and non-human resources or objects, thus authorizing respectively an individual’s agency and allocating resources (Brooks, Atkinson & Wainwright, 2008).

### Signification

This results in meaning and is achieved through the use of language or communication, specifically the interpretative schemes consisting of discursive practices, and semantic codes. Brooks et al. (2008) assert that the attachment of meaning is based upon individual knowledge and facility with language. This modality enables communication via various media.

### Legitimation

This modality ensures moral order through agents’ naturalization via internalization of norms, standards and values of socially acceptable conduct. In addition to providing human agents with rights, they also impose on them the obligation of acting in certain ways under particular social contexts.

### Domination

This is an exercise of power, which can be extended over human agents or material objects. Power originates from the control of resources and is termed authoritative or allocative. Authoritative resources extend control over individuals while allocative resources extend control over material objects. Thus, this modality is responsible for regulating behaviour and the allocation of material objects in achieving some form of agency through an exercise of power. Figure 3.4.1 below shows the relationship of the elements of structure.

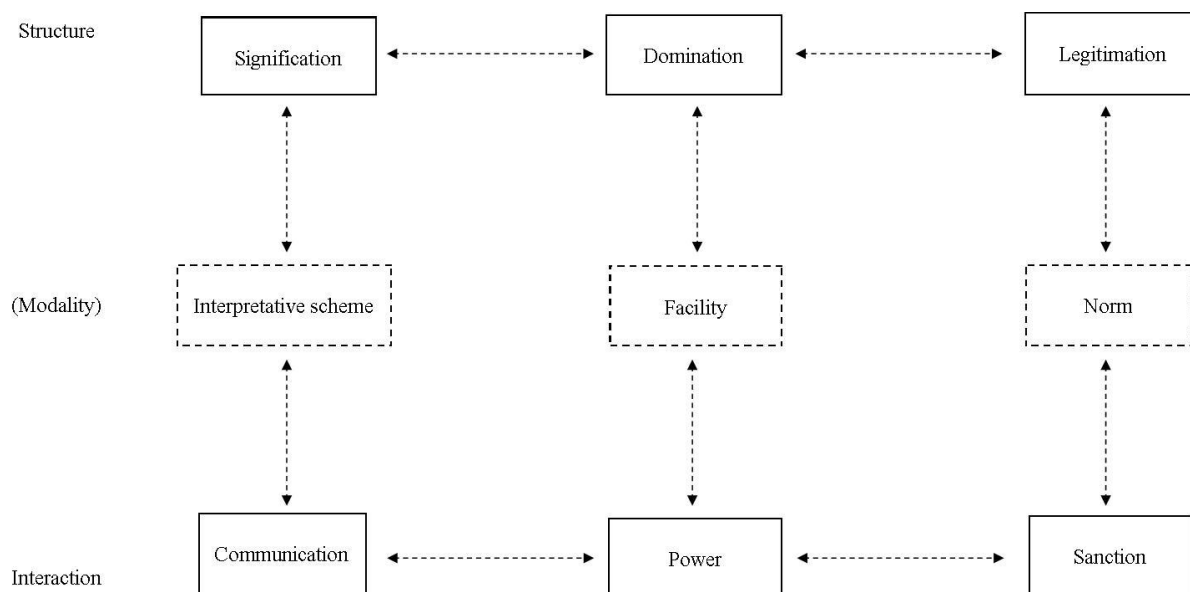


Figure 3.4.1 : Elements of structure, source Giddens (1984)

Structure has no physical attributes in reality but ‘exist in the *human mind itself*, rather than as outside constraints’ according to Walsham (2002, p. 361), an ‘expression of voluntaristic individual behaviour’ as suggested by Algesheimer and Gura~u (2008, p. 228) or the human agents’ ‘practical consciousness’ proposed by Brooks et al. (2008). Structure is therefore the attitudes and conceptions human agents draw upon in social situations. Rye (2007, p. 12) proposes that the use of technology is contextual, that is, dependent upon how users ‘interpret, evaluate and give the technology meaning. ...’ By drawing upon these attitudes and conceptions, we both replicate existing societal conditions and incrementally change them. Consequently society emerges, persists and changes both as an outcome and condition of human agency. In academic contexts, students facing social constraints in accessing learning resources (podcasts in the present study) find creative and innovative ways of going round theses constraints.

### 3.2.2 Structuration Theory and Technology Use

In its original form, ST devotes little attention to technology. According to Giddens, ‘Technology does nothing, except as implicated in the actions of human beings’ (Giddens, 1998, quoted by Jones & Karsten 2008). The rapid diffusion of technology in everyday action

has prompted the study of the intersect between technology and social structures using derivatives of ST (DeSanctis & Poole, 1994; Orlikowski, 1992, 2000; Prasad, 2009; Walsham & Han, 1993; Walsham, 2002). In the conception of Adaptive Structuration Theory - AST, DeSanctis and Poole (1994) borrow from Structuration Theory the notion of modalities. DeSanctis and Poole propose an integrative perspective that focuses on technology and social structure. They observe that AST looks at how social structures as established patterns of behaviour are appropriated into concrete situations. It takes into consideration the use of technology with regard to its 'spirit' in identifying the actions facilitating its effective use. DeSanctis and Poole (1994) propose that AST is premised on the duality of structure and proposes layers of structure and a 'spirit' of IT. Poole and DeSanctis (1992) propose an interpretive scheme through which the appropriation of technology at individual, group and organizational level can be analyzed.

Orlikowski (1992) has suggested the Structural model of technology, through which the 'nature and role' of technology in organizations could be explained. Orlikowski conceptualizes technology as embodying and therefore instantiating some of the rules and resources inherent in the structure of organizations. Orlikowski and Robey (1991), and Orlikowski (1992) have proposed a 'duality of technology' in which technology is posited as a product of human agency consisting of both physical and structural properties. Orlikowski (2000) extended her work and developed the Practice lens, which proposes a more flexible view of structure based on Structuration. Orlikowski (2000) argues that though technology has a 'script' or inbuilt patterns for its use, agents in various contexts use the technology in particular ways. She adds that some of these uses are in direct contrast to the wishes, visions, notions and limitations of the developer. Prasad (2007) proposes a Structural perspective which can be used to leverage the use of technology in developing contexts. Prasad (2007, p. 7) suggests that by presenting '... an ideal framework to understanding how resources and technology interact in organizations ...' one can better understand the intersect between technology and structure.

Others have used ST to explain research in technology-rich environments. Pozzebon and Pinsonneault (2005) propose several ways of using ST in empirical research, including strategies for collecting, analyzing and making sense of data from a Structural

perspective. Pozzebon and Pinsonneault (2005, p. 1368) suggested two modalities, namely fine-grained and broad-ranging, which used with other strategies of research, are useful in making sense of empirical research employing ST by:

‘... being closer to the ongoing events, collecting empirical material with high density that supports the structurationist analysis of a shorter period (fine-grained bracketing); or to be further from the ongoing events but with a longer period of analysis, often allowing a historical account (broad-ranging bracketing)’.

This provides researchers with a lens through which empirical studies can be explained holistically. Fine-grained bracketing modality was adopted during the study. Data was collected empirically, noting that there was a limited time frame in which analysis had to be conducted.

### 3.2.3 Structuration Theory and Change

Giddens (1977, p. 132) hints at the instability of structure by suggesting that ‘Rules and resources are the media of the accomplishment of social interaction, and as such are constantly embroiled in the flux of social life’. Sewell (1992) elaborates on how this state of flux can result in change. Sewell identifies the properties of structure that possibly lead to change and transformation, namely the multiplicity and intersection of structure, transposability of structural rules, resource accumulation and polysemy. Understanding the factors impacting on and regulating social practices can lead to a better understanding of which structures human agents use to associate with technology and how this can lead to change.

#### Structural Multiplicity and Intersection

Societies are built on practices derived from numerous distinct structures which co-exist and function in different modalities. Each distinct structure is in turn based on various types and quantities of resources. Additionally, different structures, sometimes at opposite poles



intersect, functioning as a source of change and transformation. Conversely, human agents use technology according to the structures in which they interact. This may result in the emergence of new structures as the technology is appropriated over time (Poole & DeSanctis, 1992).

#### Rule Transposability

Rules are applicable in various contexts outside the ones in which they are initially internalized. They regulate how agents behave in particular contexts and have unpredictable outcomes through which change can be introduced. Cassell (1993) suggests that because agents draw upon rules in various social contexts, ‘... the capacity to modify the rule ... is an ever-present possibility. ...’ It is this possibility of altering rules that provides the potential for change in the enactment of social practices.

#### Resource Accumulation and Polysemy

Human agents acquire resources; the basis for which accumulation is attributed to context-specific factors. Resources are used for multiple purposes including other than what they were originally intended for. Within the educational context, students draw upon resources appropriated from different contexts depending on the meaning they attach to these resources. Others contend that technology is responsible for bringing about structural change. Walsham (2002, p. 359) for example, suggests that technology has the ‘ability to enable new modes of work, communication, and organization across time and space. ...’ Edirisingha et al. (2007) and Säljö (1998) also allude to the fact that technology has the probability of altering established patterns of communication and thus teaching and learning processes themselves.

Graaff (2001) provides one of the simplest explanations for the cause of change. He contends that agents are themselves responsible for change. Graaff (2001, p. 15) suggests that ‘people reflect on themselves, change their minds, their attitudes, their knowledge and so they change society around them. ...’ This ability to reflect on and alter one’s action is what Giddens (1984, p. 3) refers to as ‘reflexivity’ or reflexive monitoring of action’. Giddens purports that human action is a continuous flow of conduct consisting of three processes, one of which is constant monitoring of action. He adds that it is through reflexivity that we scrutinize not

only action, but the social and physical aspects of our context as well. It is this constant monitoring of action which is responsible for producing or reproducing patterns of behaviour.

### **3.3 CHAPTER SUMMARY**

This chapter has looked at the theoretical underpinnings which informed the study. It looked at learning from the Constructivist perspective. It also discussed Structuration Theory and how its been used to explain how change comes about in society. The next chapter presents the research methodology and methods employed for the study.

## **CHAPTER FOUR**

### **RESEARCH METHODOLOGY AND METHODS**

#### **4.0 INTRODUCTION**

This chapter outlines the research methodology and methods employed during the study. Section 1 outlines the research methodology, while section 2 describes the data collection methods employed. Sections 3 and 4 present the ethical issues considered during the study. The study involved two cohorts of students in 2008 and 2009 enrolled on a postgraduate module. The study was piloted in 2008 and the main study conducted in 2009. The module investigated ran in February-May 2008, and over five and half days in May-June 2009. The researcher attended and observed all seminars in May-June 2009, while face-to-face interviews were conducted between June and November 2009. Access logs were generated and downloaded in July 2009. Data was analysed between November 2009 and March 2010. The timeline is attached as Appendix B.

#### **4.1 RESEARCH METHODOLOGY**

The study was interpretive in nature; it used qualitative research methodology, though quantitative data was used for purposes of triangulation. Cohen, Manion and Morrison (2007) define methodology as the research approach used during research. Qualitative research according to Fraenkel and Wallen (1990, p. 368) are ‘studies that investigate the quality of relationships, activities, situations, or materials. ...’ Qualitative research makes use of both interactive and non-interactive strategies for data collection as this allows for the incorporation and corroboration of new ideas as they emerge throughout the research process (Schumacher & McMillan, 1993). Qualitative research uses a variety of data collection strategies, most of which require the researcher to be the primary research tool.

An interpretive paradigm was adopted because the researcher’s interest was in exploring and explaining the interface between reflective learning practices and podcasting from the students’ perspective. Cohen et al. (2007, p. 21) propose that the purpose of using an

interpretive paradigm is to ‘... understand the subjective world of human experience ...’ from the subject’s perspective, not from the researcher’s. Cohen et al. (2007) adds that as interpretive approaches focus on subjects’ actions, one can understand subjects’ actions if they are shared. The interpretive paradigm was thus ideal for understanding students’ experiences on the module and specifically in using podcasts to mediate reflection.

Qualitative research approaches such as ethnography and case study, according to Le Compte and Schensul (1999a), focus on an individual or group as the only unit of study. The main research strategies used were ethnography and case study. Delamont and Atkinson (1980, p. 139) define ethnography as ‘research on and in educational institutions based on participant observation and/or permanent recordings of everyday life in naturally occurring settings’. The researcher interacts with the subjects in their natural environment. Schensul, Schensul and Le Compte (1999) propose that the purpose of ethnographic research is to gain better insights into a group by examining it within the broader social context in which it is located. Le Compte and Schensul (1999a) propose seven characteristics of ethnographic studies, including conducting them in natural settings as well as locating action within particular social contexts.

Methods such as participant observation, face-to-face interviewing, researcher reflection/journaling, and analysis of archival records are among the most commonly used in ethnographic studies (Eisenhart, 2001; Schensul et al., 1999). The researcher used participant observation in order to identify the social dimensions of the group under study and how these may have affected the use of podcasts to mediate reflection. Participant observation was also useful in establishing rapport with the students, as well as identifying students for subsequent face-to-face interviewing. Le Compte and Schensul (1999a, p. 12) suggest that ethnography’s ‘... emphasis on participants’ perspectives and meanings ...’ facilitates the construction of an accurate picture of human action in specific contexts. Schumacher and McMillan (1993) contend that extensive data collection phases ensure that qualitative research has high internal validity, as does the use of participants’ language and field research methods like observation.

A case study approach was employed in line with the objective of the study; to focus on podcasting as a single phenomenon in order to understand its potential for promoting reflection in higher education in its real-life context. Participant observation and face-to-face

interviews were conducted in settings within which students' experiences with podcasts occurred. According to MacNealy(1997, p. 183), case study is a qualitative research tool which 'aims to provide a rich description of an event or of a small group of people or objects'. Schumacher and McMillan (1993) have posited case study as one of the most useful methods in educational research due to its flexibility and adaptability in a range of contexts, foci, people and processes. Case studies typically focus on phenomenon which is of interest to the researcher, though it may involve the investigation of small distinct groups on a single site or numerous participants on multiple sites over an extended period of time. Case studies are ideal in developing a model or concept, as well as providing detailed description and analysis of themes in specific contexts as revealed by participants (MacNealy, 1997; Schumacher & McMillan, 1993). This echoes Fraenkel and Wallen (1990), who state that the study of unique individuals or groups, in specific contexts can provide researchers with valuable insights which may be used to design interventions applicable to individuals or groups in similar contexts. The purpose of a case study, notes MacNealy (1997) is to gain better understanding of a specific event, individual or group.

Quantitative data, in the form of access logs, was used for purposes of triangulation. This data is discussed further in section 2.1 of the present chapter. While interviews were conducted to elicit students' experiences with podcasting, the access logs served as a corroboratory data collection strategy.

Section 1 of this chapter has provided a detailed description of the research methodology of the study. Section 2 outlines the data collection methods.

## **4.2 DATA COLLECTION METHODS**

Three data collection methods were used. The methods are: participant observation, document analysis and face-to-face interviews. The use of two or more data collection methods in studying human behaviour is referred to as triangulation (Cohen et al., 2007; Le Compte & Schensul, 1999a). By studying human behaviour from multiple perspectives, one is able to describe specific phenomenon more accurately. This also increases the validity,

especially of qualitative research, as noted by Fraenkel and Wallen (1990), MacNealy, (1997) and Creswell, Hanson, Clark Plano and Morales (2007). Triangulation also increases the reliability of the data collected, assert Schumacher and McMillan (1993).

#### 4.2.1 Document Analysis

The researcher used access logs as data. Vula was used as a podcast server. Sakai is the learning management system - LMS used at UCT. Vula is UCT's brand of Sakai<sup>23</sup>, the free and open source learning management system pioneered by MIT, Michigan, Indiana, and Stanford universities. Initially conceptualized as an open collaboration and learning environment - CLE, Sakai has evolved into feature-rich software used by more than 160 institutions including universities, colleges, and schools worldwide. Over one-third of the world's top 100 universities contribute to the development of Sakai. All students registered for programmes of study at UCT have access to course sites on Vula, if any are available. Vula keeps track of the number of times users download resources in the form of access logs. The researcher used these access logs to corroborate student accounts of podcast use. Fraenkel and Wallen, (1990) argue that both primary and secondary documents can be used to determine and summarize the experiences of individuals under study. These documents can be numerical records, policy documents and verbal or oral interviews.

##### Podcast Access Logs

Logs are useful in determining patterns of behaviour as MacNealy (1997) suggests, which in this study, was the access of specific podcasts by students enrolled on the module under investigation. Access logs show which resources were accessed by whom, when and how many times on a course site.

#### 4.2.2 Participant Observation

This included observing and participating in all seminar activities for the module under investigation. Le Compte and Schensul (1999a, p. 91) define participant observation as 'a data collection technique that requires the researcher to be present at, involved in, and

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<sup>23</sup> <http://sakaiproject.org/portal>

recording the routine daily activities with people in the field setting'. The researcher attended and participated in all student activities including seminars, group discussions and group activities. Though the observation was unstructured, the researcher paid particular attention to students' reaction to course expectations, including using various tools and resources to facilitate reflection, as well as how they interacted with each other and with lecturers over the duration of seminar activities. Cohen et al. (2007) recommend using observation as a research technique because it provides researchers with the opportunity to collect 'live' data from their natural settings.

All observations took place in the seminar venue, or laboratory in the case of practical activities. The researcher interacted with students both during face-to-face sessions and after. Time was spent with the students outside of scheduled activities in order to obtain detailed and accurate information from their perspective. As the purpose of the observation was to investigate actual student behaviour in its natural setting, the observation was not structured. Cohen et al. (2007) note that unstructured observation is particularly useful in categorizing and verifying emergent behaviour over the course of the observation period, while Cresswell (2008) suggests that this helps in identifying and reconciling any inconsistencies between student behaviour inferred from documents such as podcast access logs and self-reported accounts.

#### **4.2.3 Face-to-face Interviews**

The interviews followed the last five stages of the interview process outlined by Kvale (1996), namely design, interview, analysis, verification and reporting. The interview guide used consisted of open-ended semi-structured questions. The questions were used in order to elicit a clear and deeper understanding of students' experiences and consequently interpretation of data obtained. Though guided by the interview schedule, the researcher attempted to introduce informal and conversational attributes to the process in an effort to build on the context and natural flow of conversation (Fraenkel & Wallen, 1990). The researcher conducted all interviews personally, except for one. This was conducted electronically through e-mail as the respondent was keen to take part in the study but could not meet the researcher due to time constraints.

All face-to-face interviews were recorded using a digital audio recorder. Non-verbal behaviour was noted as the interview proceeded. The digital audio recorder was useful in ensuring that the researcher accurately captured participants' responses without being overly concerned with summarizing, paraphrasing or misrepresenting students' views. Recording the interviews also provided the researcher with files which could be re-played over again for continued study and analysis, which also ensured accurate representation of students' views (Fraenkel & Wallen, 1990). After each interview, the researcher took note of opinions and feelings arising and used these together with the transcripts of the interviews in order to provide a rich data set as outlined by Kvale (1996) and Cresswell (2008). The researcher transcribed all the interviews and the transcripts analyzed with data collected using other instruments.

The semi-structured interviews focused on students' knowledge of and experiences with using podcasting to support learning in general, and reflective learning in particular. The questions were of various types and were meant to elicit various responses from students, (Giddens, 2009). Factual questions were used to get an overview of what happened, comparative questions were meant to show whether students' experiences were the same or not, developmental questions were meant to bring out any patterns of podcast use among the students while theoretical questions were meant to probe what underlay podcast use among the group of students and how this might be explained.

The interview schedule (Appendix A) was adapted from instruments used by others who have interviewed students regarding educational podcasting. These included the schedules and questionnaires used by the IMPALA project at Leicester University and the Duke University evaluation study conducted by Lane in 2006. The interview guide approach has been shown to provide a comprehensive data set and enables data to be collected systematically for each subject (Patton, 1980, quoted by Cohen et al., 2007).

The interview guide consisted of fourteen open-ended questions. Open-ended questions were used in order to introduce some flexibility as these allow for further probing should the interviewer seek clarification (Cohen et al., 2007). Creswell (2008, p.225) contends that



open-ended questions enable respondents to ‘...voice their experiences unconstrained by any perspectives of the researcher or past research findings’. MacNealy (1997) suggests that open-ended questions allow for critical interpretation of interview data, counteracting the effects of self-reporting and partial recall of practices by interviewees. The semi-structured interview guide was piloted with a participant within the 2009 cohort. It was then adjusted to accommodate issues not considered before piloting, such as time constraints due to tight activity scheduling.

The preceding section of this chapter has provided an outline of data collection methods employed. Section 3 discusses ethical considerations taken into account when conducting the study.

### 4.3 ETHICAL CONSIDERATIONS

Ethical principles are a crucial aspect of research, especially research involving human subjects. They provide guidelines on what to do at every stage of the research process, and especially in difficult situations (Cohen et al., 2007; Schumacher & McMillan, 1993). Ethical clearance was obtained through the Graduate School in Humanities - GSH before the study was conducted. A proposal outlining the intended study was submitted when obtaining ethical clearance. Permission was also obtained from the course convener to carry out the study on the module. The researcher adhered to ethical guidelines as closely as possible throughout the duration of the study. The researcher followed Cohen et al.’s suggestions for undertaking field studies, as well as UCT’s Draft Policy Document<sup>24</sup> for research involving human subjects. These included:

- familiarization with the university’s ethical framework, guidelines and codes of practice involving research with human subjects;
- informing students of the researcher’s presence and intentions from the first day of class and distribution of consent forms during the observation phase; and

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<sup>24</sup> <http://www.cet.uct.ac.za/policy>

- gaining access to and acceptance in the research setting via establishment of rapport with students and eventual interview of subjects.

#### Informed consent

This according to Kvale (1996) involves informing participants in a study of the purpose of the research, main design features and possible risks which could arise from participation. The researcher obtained students' informed consent to participate in the study during the first session of contact time. Consent forms were distributed, signed and returned to the researcher. During the interview phase, the steps for conducting ethical interviews as outlined by Kvale (1996) were followed when conducting the face-to-face interviews. Kvale emphasizes making interviewees aware of issues regarding informed consent, confidentiality and consequences. The consent form specified how the data collected was going to be used and possible publication.

#### Avoidance of harm

Precautions were taken in order to prevent respondents from being harmed, either physically or emotionally. All interviews were conducted in locations on campus familiar to students, including residency rooms. One interview was conducted in the foyer to the GSH as the student lived off-campus. Entrances were kept unlocked and people could come and go as they wished, though roommates were not present during interviews.

#### Ensuring of Privacy/Anonymity/Confidentiality of Respondents

The researcher assigned pseudonyms to all interviewees in order to ensure their privacy. Names of places that would have revealed the identity of specific students were altered, as suggested by Kvale, 1996. Both audio files and transcripts of interviews were stored in electronic format on the researcher's personal computer and only the researcher had access to them.

## Role of the Researcher

### Issues and Debates-2008

The researcher was registered as a student on the first year of the Master's programme by course work and dissertation, completing the requisite four modules. All students, including the researcher had access to the resources on the 2008 course site and could download course content. The researcher asked for and was given the rights to view access logs in May 2009.

### Issues and Debates-2009

The researcher observed and participated in all student activities including lectures, group discussions and student seminars on the module. Refer to sections 2.2 and 2.3 of Chapter 5 for a detailed description of the course and learning tasks. The researcher also had the responsibility of editing all the audio files and uploading the podcasts created onto the Vula course site. The researcher could upload as well as download any resources onto the course site and had rights to view access logs as the module progressed. The researcher also made their position on the module clear from the outset.

## 4.4 TIMELINE

The study followed the research outline, attached as Appendix B.

## 4.5 CHAPTER SUMMARY

This chapter has discussed how the researcher approached the research process. It has outlined the research design and data collection approaches used. The chapter has justified the research methodology and data collection techniques used. The next chapter gives a detailed description of the case study. It discusses both the historical and current higher education landscape and also provides a detailed description of the structure of the Master's programme from which one module involving two cohorts were investigated.

## **CHAPTER FIVE**

### **DESCRIPTION OF CASE STUDY**

#### **5.0 INTRODUCTION**

This chapter describes the case study and is organized in three sections. Section 1 presents the context of the study. This is followed by a description of the structure of the Masters programme in section 2, while section 3 gives details of the study site for the years 2008 and 2009.

#### **5.1 CONTEXT OF THE STUDY**

##### **5.1.1 Higher Education in South Africa**

Higher education in South Africa has undergone significant change since the mid 1990s. One of the first actions of the majority government was the appointment of a National Commission on Higher Education - NCHE in 1995, tasked with recommending policies to rectify past inequalities and inefficiencies in higher education. Major policy documents released by the Department of Education in the 1990s, including the Education White Paper 3 (DOE, 1997) and the National Education Policy Act, 1996 (DOE, 2001) emphasize transforming the educational landscape, making it more representative of the demographics of South African society.

Massification and merging of public higher education institutions - HEIs were the major themes of national policy on education in the mid 1990s. Massification was the primary theme of the NCHE report, as well as the 1996 Green Paper on Higher Education and the 1997 Education White Paper 3. Jansen (2003b, p. 296) observes that massification was expected to alter the student population to reflect the ‘... race and gender profile of the nation ...’ eventually leading to ‘... a mass-based system. ...’ Jansen adds that sector-wide

massification did not proceed as expected but was instead limited to a small number of Historically White Institutions - HWIs with the ability to increase their market share. HWIs eased entry requirements in their effort to ensure student equity as guided by national policy (Jansen, 2003a, 2003b). Consequently, students from Historically Black Institutions - HBIs require more academic support compared to their peers from HWIs. Students from other African countries would also require similar academic support in order to make the transition to UCT smooth. This study therefore seeks to contribute, through the use of podcasts, ways of ensuring that students receive the academic support they need.

By the late 1990s, massification gave way to mergers as a way of ensuring equity in higher education. By 2002, cabinet approved proposals for the merging and incorporation of specific institutions by the then Minister of Education. Jansen (2003b, p. 303) points out that this included the 'incorporation or reorganization of colleges into existing universities and technikons. ...' The impetus for restructuring higher education was the expectation of a more efficient sector, what the DOE (1997, p. 17) refers to as 'a single coordinated system. ...' Though the purpose of a single coordinated system was not homogeneity, curriculum in most HWIs has not been adjusted to take into account the altered student population caused by massification and mergers. Some effort has been made with the introduction of Extended Curriculum Programmes - ECPs, which admit underprepared students into programmes run over a longer period compared to normal programmes. Extending the duration of the programme alone does not address the academic needs of students on ECPs without appropriate mediation.

South Africa currently has thirty-six public higher education institutions constituting twenty-one universities and fifteen technikons. Subotzky (2005) argues that despite an increase in students from disadvantaged backgrounds in HWIs, these are concentrated at lower qualification levels, and in fields previously associated with subordinate roles in the labour market including the humanities, public service and social sciences. Making mergers a top priority of national educational policy has since been questioned; citing uncertainty in producing intended beneficial results and use of greater energy and resources in ensuring their success (Subotzky, 2005). It remains to be seen if the intended outcomes of mergers will

be realized or not, as the path has been anything but smooth, as illustrated by Gibbon, Habib, Jansen and Parekh (2001).

### **5.1.2 The University of Cape Town - UCT**

Initially founded as a boy's high school in 1829, the South African College - SAC, UCT<sup>25</sup> is South Africa's oldest university. It became established as an institution of tertiary education between 1880 and 1900. The SAC admitted the first female students in 1887 and the first non-white students the 1920's. The institution grew between 1902 and 1918, with the establishment of the Medical School, department of education and the introduction of Engineering courses. The university is currently comprised of six faculties namely; Commerce, Engineering and the Built Environment, Law, Health Sciences, Humanities and Science. The faculties are supported by the Centre for Higher Education Studies - CHED. It is CHED's mandate to address the teaching and learning needs of the university community.

As a HWI, UCT has seen an increase in non-white students resulting in a diverse student profile. While diversity adds richness to the university community, it also brings challenges, which include addressing the learning needs of differentially prepared students. The purpose of this study was to investigate how podcasts helped to mediate reflection among postgraduate students.

### **5.1.3 Centre for Educational Technology - CET**

The study involved students enrolled on a postgraduate module offered by CET<sup>26</sup>, a department of CHED in collaboration with the School of Education - SOE. The module is part of the Masters in Education ICTs programme located in the SOE. The SOE is part of the Faculty of Graduate Studies in Humanities - FGSH. The department CET was established initially as 'an inter-faculty educational technology unit' tasked with the development of 'learning tools, environments and multimedia' among other things, according to the UCT Educational Technology Policy Document<sup>27</sup> drafted in 2003. The primary areas of operation

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<sup>25</sup> <http://www.uct.ac.za/about/intro/history/>

<sup>26</sup> <http://www.cet.uct.ac.za/masters>

<sup>27</sup> <http://www.cet.uct.ac.za/policy>

of CET are staff development, curriculum and resources development, learning technologies development and research into the use of ICTs for teaching and learning purposes.

In this section, a description of the context in which the study took place has been presented. The next section outlines the structure of the Masters' programme. It includes an overview of the curriculum and course description of the specific module investigated.

## **5.2 STRUCTURE OF MASTERS PROGRAMME**

In order to cater for students' various needs, the programme is offered in three ways: Postgraduate Diploma in Education - PGDE; Masters by coursework; and Masters by dissertation only. Students admitted to the coursework Masters initially register for the PGDE and are required to pass four modules before proceeding to the second part of the Masters degree. Once admitted to the second part, students register for the Advanced Research Design module, conduct research and complete a minor dissertation. Students not obtaining the minimum pass-mark exit the programme with a PGDE.

Students with suitable qualifications, for instance Honours' degree or proven research ability, can be admitted to the degree by research only, in which case they conduct research and complete a full dissertation instead. Five students enrolled on the programme when it was initially offered in 2007. In the years 2008 and 2009, student numbers increased to sixteen and seventeen respectively.

The programme offers a total of four modules, two of them electives. Staff employed at CET teach on three of the four modules. One of the core modules, 'ICTs in Education: Issues and Debates', was initially offered in the first semester and run from February-April in 2007 and 2008. The other core module, 'Learning, Cognition, and Technology', a second semester module was initially run from July-September in 2007 and 2008. Face-to-Face meetings were held twice a week (Tuesday and Thursday from 16h00 to 19h00) in 2007 and 2008 for the

two core modules. Other modules are the electives ‘Educational ICTs for Developing Contexts’ and ‘Online Learning Design’ offered for the first time in 2009.

One of the aims of the Masters in Education ICTs programme is to equip professionals with the knowledge and skills essential in making informed decisions regarding the use of ICTs in their education-specific contexts. This is in line with government’s vision of enhancing teaching and learning using ICTs and how technology has brought about change in the acquisition, distribution and production of knowledge (DOE, 2004). Though there is no Information Technology prerequisite for the programme, students are required to be computer literate as extensive use is made of electronic media for teaching, learning and communication purposes.

### 5.2 1 Curriculum Overview

As a module, ‘ICTs in Education: Issues and Debates’, is structured around the three inter-related themes<sup>28</sup> revolving around how ICTs can be used to mediate learning in general. The curriculum is intended to equip students with the knowledge and skills needed to conceptualize the educational challenges encountered in developing contexts and how ICTs in general and educational technology in particular can be used to address these challenges. The short form ‘Issues and Debates’ introduced initially in Chapter 4.3, will be used to refer to the module henceforth. The curriculum covered includes using ICTs in education, evaluating on-line learning design models and their applicability in education. ‘Learning, Cognition and Technology’, the other core module offered since 2007, looks at the interface between cognition, learning and technology.

Students may opt to register for other approved electives from other departments deemed suitable by the faculty. All CET modules are based on Constructivist principles and have been delivered in block release format from 2009.

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<sup>28</sup> EDN6099F 2009 course reader



### 5.2.2 Issues and Debates

The module is underpinned by reflective learning principles. Various activities are integrated into the teaching and learning processes with the view of developing critical reflective skills in students. Student activities include keeping a reflective journal and using podcasts generated during face-to-face sessions. All sessions, including but not limited to student reviews of seminar activities and lecture presentations were recorded.

At the beginning of each seminar, a preview of the previous session was outlined and a recap session was held at the end of each seminar. Students were encouraged to write a daily blog serving as an individual reflective journal. The blog's purpose was to provide a self-reporting narrative of student individual learning and a personalized space through which they could highlight the issues arising from the readings, seminars and group work. The blog was private, accessible only by the course convener and the student who authored it.

Teaching strategies used on the module include presentations by the course convenor and guest lecturers, group activities and individual projects. Four pieces of work were expected from students namely, group tasks, reflective blog, seminar presentation and academic paper. The paper was expected to be no less than six thousand words on a topic of students' choice based on the issues, debates and technologies students engaged with on the module.

#### Course Description

The module made extensive use of the LMS in order to model use of ICTs for teaching and learning, which is one of the objectives of the Masters programme. The 'Issues and Debates' module incorporated both theory and practical aspects of technology use in HEIs. There was hands-on experience on the educational applications of technologies as these were integrated with the activities used to teach the module. Students engaged with blogs, DFAQ (see Ng'ambi & Johnston, 2006; Ng'ambi & Brown, 2008), chat, forums, Google groups, Instant Messaging, podcasting and wikis.

The Vula course site was used for communication. The course convener posted announcements that included reminders on assignment deadlines and requests for students to complete on-line evaluation. In 2009, the communication tools, specifically the forums were used by students for putting up deliverables from group work, as well as for pre-contact activities such as self-introductory pieces. The course convener used the chat-room to advice on changes to assignment deadlines. Uses of the course site that were common to both cohorts (2008 and 2009) included sharing resources like course readings and Power Points of lecturer presentations, while students used the Drop-box to hand-in and receive feedback on assignments.

#### Creation and Distribution of Podcast Artefacts

Audio artefacts were generated through recording of events using a handheld digital audio recorder, edited and uploaded onto the Vula course site on a daily basis. Vula was used as the podcast server as all students had access. Students could either download the podcasts from the course site, or subscribe to the podcasts by RSS feed. In 2008, a doctoral student on the module was responsible for editing the audio files and uploading the podcasts onto the course site. In 2009, this task was taken over by the researcher.

#### Group Tasks and Individual Assignments

When the programme was altered to run on a block release basis, greater use was made of Vula. Resources were made available on the virtual platform at least a week before scheduled sessions begun. Students conducted group tasks face-to-face and handed in deliverables through the Drop-box. Individual assignments were handed in the same way.

### 5.2.3 Learning Tasks

All students were required to take part in all tasks, either as part of a group or individually. This included pre-seminar readings, attending face-to-face sessions and keeping a reflective blog. Students were expected to research, present at a seminar and write an academic essay based on the issues, debates and technologies encountered during the module. None of the learning tasks engaged in during face-to-face sessions required students to use podcasts.

Students were required to keep a daily reflective journal using the blog tool on Vula. This gave students the opportunity to use the podcasts created during face-to-face sessions. Only individual students and course convenor had access to these reflective journals. The blogs were kept private in order to provide an environment in which students could reflect freely.

### Resources

To enable students to carry out their tasks efficiently, core and supplemental readings were provided both on-line and during face-to-face sessions both in 2008 and 2009. In 2009, the core readings were compiled into a course reader distributed to students on the first day of face-to-face sessions. The course site was available to students at least a month before scheduled contact sessions begun.

### Podcasts

All podcasts created from seminar activities were uploaded onto the course site. One of the purposes of providing podcasts was to augment students' reflection on their learning. The assumption was that the value of podcasts lay in providing content to be used at students' convenience and away from face-to-face sessions. Students would critically engage with the day's presentations by using podcasts to mediate critical engagement with learning resources. The podcasts were of two types: student-generated podcasts contained report-backs of group discussions and individual reflections of activities, while lecturer podcasts contained the presentations made by the course convener and guest lecturers on the module. Most of the podcasts were lectures and seminar activities created as the module ran.

The Centre for Educational Technology is not the only department at UCT using podcasts to mediate learning. Various departments, both at undergraduate and postgraduate level make podcasts available to students as an optional learning resource. Non-academic groups at the university also make podcasts available either to members or the wider university community. Appendix C is a list of sites using podcasts at UCT. The list is not exhaustive as it does not include sites publishing podcasts on platforms other than the university's LMS.

The previous section outlined the structure of the Masters' programme, which included an overview of the curriculum and course description of the module investigated. The next section describes the study site for both the pilot and main study. The study involved two cohorts of postgraduate students in 2008 and 2009. The module investigated run in February-May 2008, and May-June 2009. As a research assistant, the researcher had administrative rights to the Vula site for the module under investigation.

## **5. 3 CASE STUDY DESCRIPTION**

### **5.3.1 Pilot Study: Issues and Debates**

The pilot study was conducted with a 2008 cohort of students. The module, 'Issues and Debates', ran from February 19 to May 02, 2008 with sessions held twice a week for three hours for six weeks. All practical sessions were held in the lab at the Upper Campus Student Learning Centre - UCSLC. This ensured equitable access to the resources needed for practical tasks while students where on campus.

#### **Student Profile**

Sixteen students were registered for the module. Three of them were UCT staff while two were doctoral students. The students came from different backgrounds, including higher education, primary and secondary schools and government. Students had academic qualifications at undergraduate or Honours level, though some had Master's degrees in fields other than education. Seven of the students where non-South African and were from the SADC region and East Africa. Ten of the students were female while the rest were male. Table 5.3.1 below summarizes the 2008 student profile.

Table 5.3.1: Student profile 2008<sup>29</sup>

Context	Discipline	Experience
Government	Technology	IT systems,
HE	Disability	Blackboard (student/tutor)
HE	Health Sciences	Web CT, Vula
HE	Administrator	SAP, PeopleSoft
HE	Science	ICT teaching
HE		Web CT
HE	Project Management	Vula
HE	Technology	IT systems
HE & Primary	Technology, ACE	Moodle
Primary	Teacher	PowerPoint, Khanya
Secondary	Teacher	PowerPoint
Secondary	Youth Development	PowerPoint, Vula
Secondary	Technology	Moodle, Spreadsheet, Email
Secondary	Science, Math	PowerPoint, Internet, Word
Secondary	Teacher	Virtual learning resources
Secondary	Science	Internet, Email

### 5.3.2 Main Study: Issues and Debates

The 2009 cohort was the main study. The module was altered to run from the bi-weekly seminar mode to block release mode. Seminars were held over five and half days from 08:30am to 05:00pm, from April 20 to May 02, 2009. Sessions were held in the Faculty of Graduate Studies in Humanities Common Room. All practical sessions were held in the same

<sup>29</sup> CET Annual Report 2008

venue as the previous years. Due to the change in mode of delivery in 2009, the observation period was extended to the module ‘Educational Technologies in Developing Contexts’. The module was also co-convened by CET and the SOE. It was also based on similar pedagogical and technology interventions. A consent form was distributed on the first day of ‘Issues and Debates’ (see Appendix D).

Of the seventeen students registered for the module in 2009, ten agreed to be interviewed. Four eventually declined to continue with the study. One of the students from the 2008 cohort showed interest in taking part in the study and was subsequently interviewed. The subject was registered for the module ‘Educational Technologies in Developing Contexts’. Of the seven students interviewed, one was female. Keeping in mind the effect of physical location on the flow of discussion, all interviews were conducted where students were comfortable, and most preferred their residence rooms.

#### Student Profile

Seventeen students registered for ‘Issues and Debates’ in 2009. All students had academic qualifications at undergraduate or Honours’ level; though some had Master’s degrees in fields other than education, and one had a doctorate. The Mellon Foundation sponsored nine of the seventeen students, who came from five African countries, namely Nigeria, Kenya, Uganda, Mozambique and Zimbabwe. One of the non-Mellon students was Canadian, and the rest were South African. Seven of the students were female and ten were male. The students profile is summarized in table 5.3.2 below.

Table 5.3.2: Student profile 2009

<b>Context</b>	<b>Discipline</b>	<b>Experience</b>
Corporate	IT	IT systems, Vula
Corporate	Publishing	Web CT
Corporate	Placement and recruitment	Web CT
Government	Advisory	Internet, Email
HE	Social Sciences	Various including Blackboard, KEWL, Moodle and Web CT
HE	IT	IT systems
HE	IT	IT systems, Moodle
HE	IT	IT systems, Moodle
HE	Work placement	Moodle, Web CT, Vula
HE	e-learning	Moodle
HE	e-learning	Blackboard, Moodle
HE	Dentistry	Fronter, Moodle
HE	Administration	Internet, Email
HE	Administration	Various including Blackboard and Moodle
HE	Social Sciences and Economics	TeleTOP
HE	Veterinary Medicine	Web CT, Blackboard
HE	IT skills training	IT systems

Students' background and context may have affected whether or not they used the podcasts provided to mediate reflection. Background and context determine the attitudes; biases, perceptions and values students bring to the educational space. These in turn influence how they use the tools and resources provided by educators. Reference is made to sections 1.2 and 1.3 of Chapter 6, which provides the context under which podcasts were used during the contact week. Interview data presented in section 1.3 of Chapter 7 shows that there is a near even split among students from other parts of Africa, with some being top users and others

less frequent users of podcasts during the contact week. Whether this is an indication of the necessity for more help in integrating prior knowledge and new knowledge, underdeveloped information processing skills or novelty in using the technology is not clear as this was not explored in the present study.

## **5. 4 CHAPTER SUMMARY**

This chapter provided a detailed description of the case study. It has discussed the historical higher education landscape and the background under which the study was conducted. It has also given a description of the structure of the Master's programme and the student population from which respondents were drawn. The next chapter outlines the data analysis procedures used and present the findings of the study.



## **CHAPTER SIX**

# **DATA ANALYSIS PROCEDURES AND PRESENTATION OF FINDINGS**

## **6.0 INTRODUCTION**

This chapter is comprised of one section, which presents and discusses the data analysis process. This chapter gives an outline of the data analysis procedures, namely creation of frequency intervals for the access logs and the Constant Comparative Method of Coding - CCMC for the interviews. The chapter also presents the findings of the study.

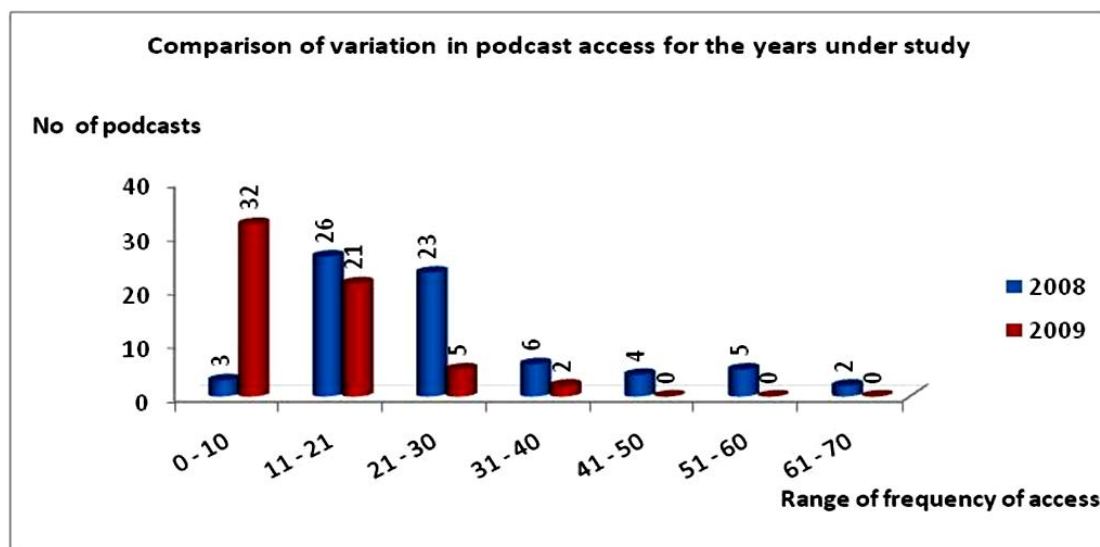
## **6.1 DATA ANALYSIS PROCEDURES**

### **6.1.1 Document Analysis**

Podcast access logs were analyzed by creating frequency tables with class intervals. The purpose of the analysis was to establish patterns of use by user and podcast. The class intervals showed how many podcasts were downloaded within specific class intervals for both years. The podcasts were classified according to content type, namely lecturer or student podcasts. Lecturer podcasts contain all lecturers' presentations, as well as any resources the course convenor considered appropriate for use on the module. Student podcasts contain individual student reflections and student report-backs from group tasks. Individual student reflections were recorded either at the beginning or end of face-to-face sessions each day. The digital audio recorder was passed from one student to the next till everyone had had their turn.

The report generator in Vula automatically classified podcasts uploaded onto the course site by date of first access. This resulted in some podcasts not being listed in the order in which

they were uploaded onto the site. The researcher did not alter this data in any way but used it as it was generated in the report. Le Compte and Schensul (1999b) suggest using frequency tables to illustrate the range in variation exhibited in a sample. Frequency tables are used to compare the number and percentage of podcasts for both the pilot and main study. The data from access logs for the years under study was organized into class intervals in order to compare the distribution of access across the pilot and main study. Since the data set run up to 69 and 60 for the pilot and main study respectively, the data was broken into segments of ten, giving a total of seven categories, as illustrated in graph 6.1.1 below.



Graph 6.1.1: Comparison of variation in podcast access for 2008/2009

The data illustrated that frequency of access of podcasts was not equitably distributed during both years. This suggested a self-ranking trend on the basis of frequency of access. The data also revealed that there was better distribution of access in 2008 compared to 2009. In 2008, podcasts accessed the most were in the 11-21 and 21-30 class intervals, which accounted for 38% and 33% of total podcasts. In 2009, podcasts accessed the most were in the 0-10 and 11-21 class intervals, which accounted for 53% and 35% of total podcasts. This translated into 71% and 88% for the class intervals with podcasts accessed the most for 2008 and 2009 respectively.

The access logs were useful in comparing patterns of access and use for the pilot and main study, showing how these varied over time. The data is presented in a frequency table, making a comparison of the number and percentage of podcasts for both the pilot and main study possible.

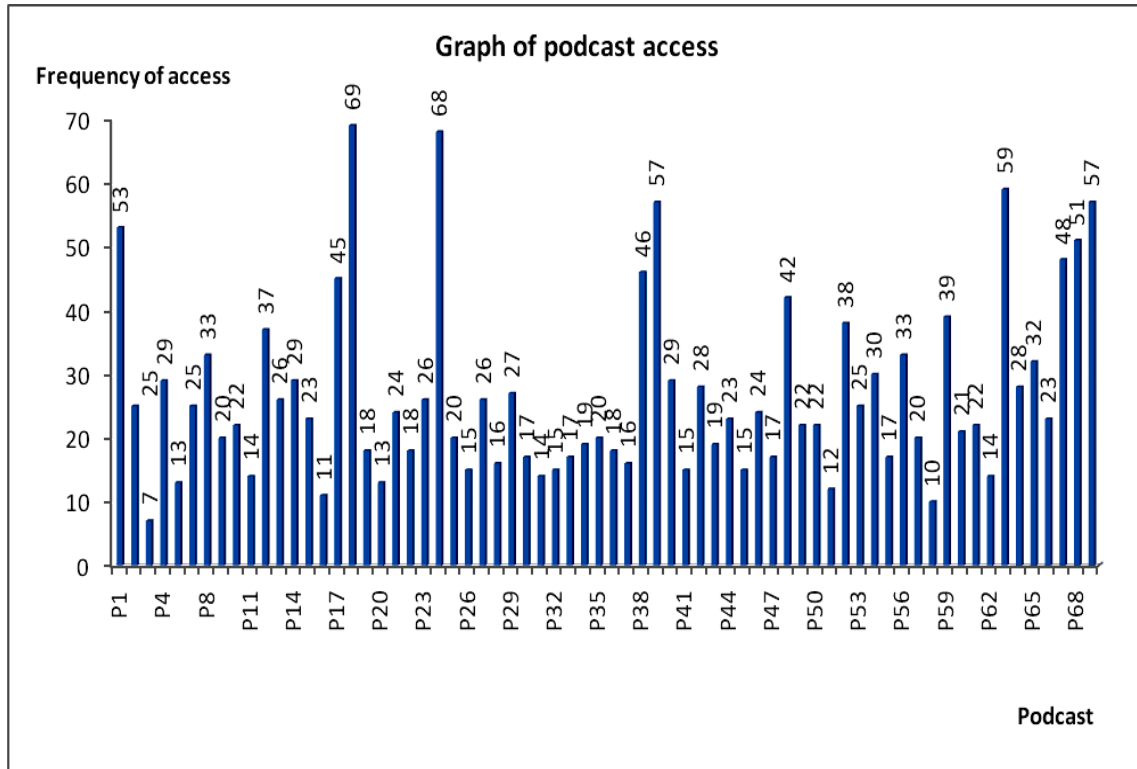
**Table 6.1.1: Distribution of podcast access by content**

<b>Class interval</b>	<b>2008</b>	<b>2009</b>
<b>0 - 10</b>	2S:1L	19S:13L
<b>Nov.21</b>	24S:2L	6S:15L
<b>21 - 30</b>	15S:8L	2S:3L
<b>31 - 40</b>	3S:3L	0S:2L
<b>41 - 50</b>	1S:3L	0S:0L
<b>51 - 60</b>	0S:5L	0S:0L
<b>61 - 70</b>	0S:2L	0S:0L
<b>Total</b>	<b>45S:24L</b>	<b>27S:33L</b>
<b>Access ratio</b>	<b>65%:35%</b>	<b>45%:55%</b>

Student-generated podcasts are labelled S, while podcasts with lecturer content are labelled L. Table 6.1.1 above shows that podcast access by content type results in a student/lecturer podcast access ratio of 65% and 35% respectively for 2008. In 2009, this changed to 45% and 55% for student and lecture podcasts.

#### Issues and Debates 2008

The total number of podcasts produced and uploaded onto the course site was sixty-nine. Out of the sixty-nine, all except one were audio podcasts. The audio podcasts were made available in two formats namely WAVE and MP3, while the vodcast was in MP4 format. Most students had an MP3 player and owned a personal computer. Some of the students burned the podcasts onto CD and replayed them on portable MP3 players. The general pattern of access of podcasts over the semester is presented in graph 6.1.2 below.



Graph 6.1.1: Frequency of access of all podcasts 2008

In addition to Vula log-ins, some of the podcasts were accessed anonymously using RSS feeds. Anonymous log-ins totalled 417, while the overall number of log-ins amounted to 1831. Of the sixty-nine podcasts, twenty-six were classified as lecturer podcasts by content type. Access logs were also analyzed by frequency of access by user. There were a total of twenty-five users on the module in 2008, eight of whom were lecturers. All the students accessed the podcasts at least once. Some of the lecturers who accessed the podcasts did not teach on the module. This is summarized in table 6.1.2 below.

Table 6.1.2: Podcast users 2008

User	Role	Frequency of access
<b>Anonymous</b>	<b>Anonymous</b>	<b>417</b>
A	Lecturer	11
B	Lecturer	17
D	Lecturer	21
E	Lecturer	1
F	Lecturer	1
G	Lecturer	82
H	Student	29
I	Lecturer	11
J	Student	130
K	Student	55
L	Student	60
M	Student	60
N	Student	107
O	Student	13
P	Researcher	69
Q	Student*	195
R	Student	82
S	Student	103
T	Student	24
U	Student	1
V	Student	75
W	Student	146
X	Student	74
Y	Lecturer	1
Z	Student	53
<b>Total</b>	<b>8 L : 17 S (T 26)</b>	<b>1826</b>

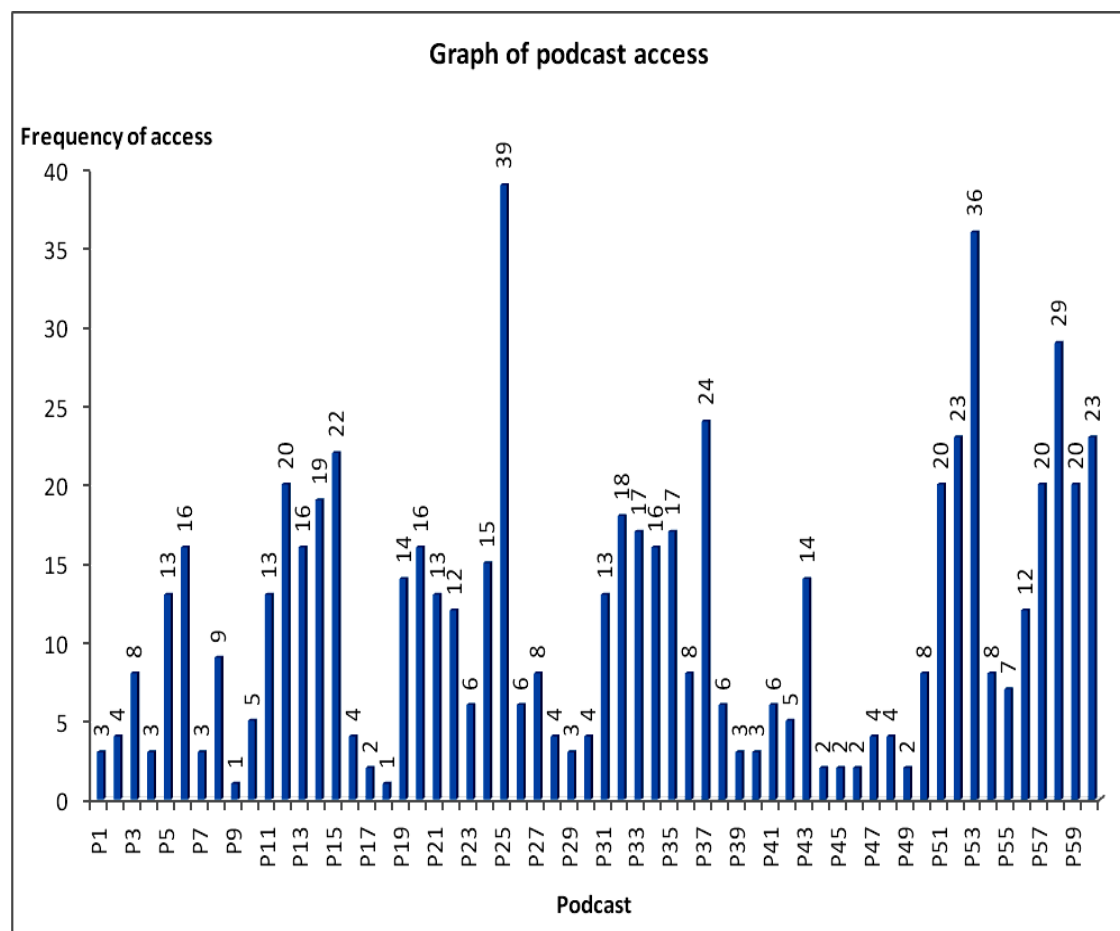
\* Indicates interview respondent

The access logs also indicate that all the sixty-nine podcasts were accessed at least once, both through Vula and by RSS feed. The podcasts however had a higher frequency of access through Vula compared to access by RSS feeds. Though students could access and download any of the resources, they had no rights to upload resources on to the course site.

#### Issues and Debates 2009

Sixty podcasts were produced and uploaded onto the course site. The podcasts were both audio and video. Audio podcasts were made available in three formats, namely WAVE,

WMA and MP3, while vodcasts were in MP4 and MOV formats. Though the module was run over one week, the podcast access log was generated at the end of the first semester in order to maintain consistency of report with the pilot study. The general podcast access pattern over the semester is presented in graph 6.1.3 below.



Graph 6.1.2: Frequency of access of all podcasts 2009

In addition to access through Vula, some students used RSS feeds to obtain the podcasts. Anonymous log-ins totalled 245, while the sixty podcasts were accessed 674 times in total. The analysis showed that some podcasts were more popular than others and were accessed more than once by the same users. Unlike 2008, both lecturers and students had equal rights to upload, as well as download resources onto the course site. It is not evident whether this affected download patterns or not as this was not investigated during the study. One student

uploaded three of the podcasts. All three are classified as lecturer podcasts as the content is not student reflection or report-backs from student tasks. One is from a laboratory session presented by the course convenor. The other two are promotional material of HEI in Southern Africa. Further analysis of the Vula log-ins only illustrates that all of the sixty podcasts were accessed at least once, while similar analysis of anonymous log-ins reveal that some podcasts were not accessed via RSS feed. Table 6.1.3 below summarizes this.

Table 6.1.3: Comparison of anonymous and Vula log-ins 2009

Podcast	Anonymous log-ins	Vula log-ins	Content
P5	8	13	L
P6	10	16	L
P8	5	9	S
P10	3	13	L
P11	7	13	L
P12	10	20	L
P13	7	16	L
P14	9	19	L
P15	9	22	L
P19	6	14	L
P20	7	16	L
P21	5	13	L
P22	7	12	L
P23	10	6	S
P24	1	15	S
P25	8	39	L
P26	3	6	S
P27	3	8	S
P28	1	4	S
P31	6	13	S
P32	7	18	L
P33	7	17	L
P34	10	16	L
P35	11	17	L
P36	2	8	L
P37	7	24	L
P38	3	6	S
P40	1	3	L
P41	1	6	L
P42	1	5	S
P43	6	14	S
P47	1	4	S
P50	4	8	S
P51	9	20	L
P52	7	23	L
P53	10	36	L
P55	4	7	S
P56	4	12	S
P57	7	20	S
P58	6	29	S
P59	7	20	S
P60	5	23	S



All seventeen students accessed at least one podcast using Vula, while it was not possible to identify which students accessed what podcasts by RSS feed. Of the ten lecturers who taught on the module, four accessed the podcasts at least once. This is summarized in table 6.1.4 below.

**Table 6.1.4: Podcast users 2009**

User	Role	Frequency of access
<b>Anonymous</b>	<b>Anonymous</b>	<b>245</b>
<b>A</b>	Student	27
<b>B</b>	Researcher	56
<b>C</b>	Student	15
<b>D*</b>	Student	8
<b>E</b>	Lecturer	4
<b>F*</b>	Student	1
<b>G</b>	Student	21
<b>H</b>	Student	5
<b>I*</b>	Student	28
<b>J</b>	Student	4
<b>K</b>	Student	5
<b>L</b>	Lecturer	9
<b>M</b>	Lecturer	3
<b>N</b>	Student	2
<b>O*</b>	Student	125
<b>P*</b>	Student	4
<b>Q*</b>	Student	31
<b>R</b>	Student	6
<b>S</b>	Student	33
<b>T</b>	Lecturer	1
<b>U</b>	Student	24
<b>V</b>	Student	14
<b>W</b>	Student	4
<b>Total</b>	<b>4 L: 19 S (T 23)</b>	<b>675</b>

\* Indicates interview respondent

Table 6.1.4 shows the users and the frequency of downloads of podcasts during the module. Student O accessed the podcasts the most, downloading some podcasts more than once. This unusually high number of downloads could be attributed to the fact that this student did not save the podcasts downloaded. This indicates that the student downloaded each time he/she

needed to listen to a podcast. The student was observed to have purchased a digital audio recorder and shared his/her audio files with peers on the later module.

### **6.1.2 Observation Data**

The purpose of the observation was to establish classroom dynamics, as well as to identify students to be interviewed. The researcher also used observations to establish rapport with students, making the interview process less awkward for both. None of the class activities required students to use podcasts so this was not the focus of observation. Initial observation was conducted while 'Issues and Debates' was in progress, between April 27 and May 2, 2009. Though no observational schedule was used, the researcher was able to gain insights into how students interacted with each other, both during face-to-face sessions and outside. This provided a complete picture of the context in which the podcasts were used.

The course convener informed the students that all sessions would be recorded, audio files edited and the podcasts uploaded onto the course site. The announcement was made during the introductory session. Class observations indicate that the recording process did not affect in-class interaction. Observation of students outside of class indicates that the rapport developed during face-to-face sessions continued. On the evening of the last day of sessions, it was observed that the students worked on their assignment together, helping each other develop initial outlines based on the questions given. This peer support could possibly have mediated reflection. Consequently, peer support may have affected the use (or lack) of podcasts for mediation purposes.

Due to the limited time available to the researcher for observation, this was extended to the next module on the Masters calendar, 'Educational ICTs for Developing Contexts', which run from June 15 to June 20, 2009. The subsequent observation period revealed that student O referred to above had acquired a digital audio recorder at the end of 'Issues and Debates'. The student recorded all sessions, despite awareness that podcasts would be made available to the class. As stated earlier, this student accessed the podcasts the most. On the evening of the last

day of class sessions, the students gathered as they had after ‘Issues and Debates’ and collaborated on developing a sample response of each question given for the assignment. They used the audio recording of the lecturer’s instructions regarding how they could go about tackling the assignment. This and all audio artefacts the student had were shared with others in the group. It is not possible to tell whether or not this affected subsequent access of podcasts from the modules which run after the ‘Issues and Debates’.

### 6.1.3 Interview Data

The researcher encouraged respondents to draw upon personal experience both as academics and students. The findings reported here therefore present both sides of students’ experiences. Table 6.1.5 below shows the profile of students from whom interview data were collected.

**Table 6.1.5: Profile of interviewees**

<b>Pseudonym</b>	<b>Gender</b>	<b>Nationality</b>	<b>Context</b>
Student A	Male	Ugandan	HE
Student B	Male	Austrian	HE
Student C	Male	Nigerian	HE
Student D	Male	South African	HE
Student E	Male	Zimbabwean	HE
Student F	Male	Kenyan	HE
Student G	Female	South African	HE

All students who consented to be interviewed were from higher education institutions. They had experience in administration, teaching and/or student placement. Others had specific experience in using technology to enhance teaching and learning, as well as educational management. Interview data were analyzed using the Constant Comparative Method of Coding - CCMC outlined by Struwig and Stead (2007). CCMC involves several steps, including,

- coding each transcript page by interviewee pseudo and gender, location of interview and page number;
- reading and rereading the transcripts several times in order to identify the various themes and categories, a process also suggested by Kvale (1996) and Tesch (1990);
- identifying units of meaning from the data, which according to Struwig and Stead, ‘make sense’ (2007, p.171) on their own;
- comparing the units of meaning with others and grouping similar units in the same category and choosing appropriate themes;
- developing codes which reflect the meaning of each category and associated theme; and
- linking the emergent categories and associated themes to the research objectives and literature.

Once all interviews had been transcribed, the transcripts were emailed to interviewees for verification. Once verified, the transcripts were read multiple times. The purpose of reading the transcripts multiple times was to look for similarities and differences in the concepts, patterns and themes in the data. Similar concepts were then grouped into categories, and similar categories into themes. The themes that emerged from the interview data are shown in table 6.1.6 below.

Table 6.1.6: Themes emerging from interview data 2009

Themes	Categories
Instructional design	Lecturer awareness
	Pedagogy of technology
Medium of use	Audio
	Video
Learning support	Disability
	Enhanced note taking
	Language
	Memory aid
	Reference/research aid
Selective listening	Capturing student viewpoints
	Individual need
	Lecturers' authority
RSS feed	Use

Each of the above themes and associated categories are discussed in section 1.3 of Chapter 7.

## 6.2 CHAPTER SUMMARY

This chapter provided an outline of the data analysis procedures and presented the findings of the study. Data analysis procedures included comparing access logs for the pilot and main study using a frequency table. This made comparison by number and percentage of podcasts accessed from each cohort possible. Interview transcripts were read multiple times in order to identify similarities and differences in the concepts, patterns and themes in the data. The next

chapter discusses the findings of the study. The findings from each data source are discussed individually.

## **CHAPTER SEVEN**

### **DISCUSSION OF FINDINGS**

#### **7.0 INTRODUCTION**

This chapter is comprised of one section, which is divided into three sub-sections. Each sub-section deals with data from each of the three sources namely: document analysis, observations and interviews. The chapter discusses the findings of the study.

#### **7.1 DISCUSSION OF FINDINGS**

##### **7.1.1 Document Analysis**

The findings suggest that general access patterns were the same for both the pilot and main study. Users accessed the podcasts either from the course site on Vula or via RSS feed. However, the frequency of access of the podcasts uploaded on to the 'Issues and Debates' course site in 2008 is higher compared to the frequency of access in 2009. Refer to section 1.1 of Chapter 6 which summarizes the distribution of access across seven class intervals for the pilot and main study, as well as the number of times each podcast was accessed.

'Issues and Debates' 2008 had a higher frequency of access of podcasts, with frequency of access dropping to almost half in 2009. The change in the mode of delivery from face-to-face sessions of three-hour meetings, twice a week for six weeks to a one-week contact session with pre-and post-contact student activities is presumed to be the reason for this significant difference. This difference could also have been due to the fact that the interval between sessions was considerably shortened in 2009. As such, students found it easier to recall the events of the previous session, thus rendering the podcasts less useful. It can therefore be inferred that the value of podcasts increases with the 'distance in time' between the event that generated the podcast and when reflection on the event happens.

Making the podcasts available in different formats appears not to have affected the frequency with which they were accessed for both the pilot and main study. This is evident from the access logs, which show that some of the most frequently downloaded podcasts were in a format least expected to be accessed due to bandwidth constraints. A specific example was the podcast produced in an overseas HEI. In the podcast, a student gives his views on where he thought educational podcasting was headed. This particular podcast was in MP4 format, which requires greater bandwidth to download, as well as a reliable, fast Internet access. Research suggests that providing students with content in none-traditional formats helps to scaffold the meaning making process, leading to more effective learning (Ng'ambi, 2008; Salmon & Nie, 2008). It appears that students made the most of broadband access available on campus to download podcasts for listening off-line when off-campus. This adds more weight to using podcasts for academic purposes as once downloaded to playback devices, access to the Internet is no longer required to listen to podcasts.

A self-ranking trend was evident for both the pilot and main study, summarised in table 6.1.1 of Chapter 6. The table shows that in 2008, student podcasts account for 65% of access, while this dropped to 45% in 2009. It can therefore be inferred that in 2008, students found their peers' views more useful while the 2009 cohort found lecturers' views more useful. This is probably because the nature of the tasks was not the same. In 2008, students were given tasks that required them to reference what peers said during the face-to-face sessions. This was not the case with the 2009 cohort. This suggests the need for integration of podcasts in pedagogy for podcasts to effectively mediate learning. This also implies that some of the frequently accessed podcasts consisted of topics which were either of interest to students or more difficult understand. The more difficult topics invariably caused students to listen to them outside face-to-face sessions.

The self-ranking trend may also be indicative of the potential of podcast use or reuse beyond the running time of the module. This was raised by some of the students interviewed, who expressed the need to make the podcasts available to them well after they left the institution should they need to use or refer to them later. Furthermore, students as well as lecturers may wish to share the podcasts they find useful with peers not on the module. For example, one of the lecturers on the 2008 user list did not teach on the module. He/she only accessed one



podcast of student-generated content. One can therefore deduce that the user was added to the course site because he/she expressed interest in the content on the module. It should also be noted that for both years, students who accessed the podcasts the most did not miss any face-to-face sessions, allaying fears that podcasts could lead to an increase in absenteeism from face-to-face sessions including lectures, a conclusion arrived at by McGarr (2009), Bongey et al. (2006) and Frydenberg (2006). Though access does not directly translate into use, it is a good indication of which podcasts attracted the most interest. This may be useful in determining the nature of content covered or what is of particular importance to students.

### 7.1.2 Observation Data

During seminars, it was not possible to deduce whether or not class interaction was affected in any way by the recording of audio files. None of the students either on the pilot or main study appeared to be affected, either positively or negatively. They all seemed to voice their opinion freely, which resulted in lively discussions. There was however no opportunity to observe podcast use as none of the face-to-face sessions incorporated activities that required students to use them in class.

As stated earlier, students accommodated in the same residency collaborated on developing an initial outline of how each question on the assignment schedule could be answered. Not only did the students discuss the assignments, they recorded and shared their discussions. These files were shared unedited. Students either borrowed the recorder itself, or brought their laptops or flash-drives and downloaded the files to these devices. This collaborative aspect of learning is empathized in the construction of knowledge structures in the philosophy of Constructivism (Hung, 2001; Kanuka & Anderson, 1999). Collaboration enables each student to actively participate in the learning process (Perkins, 1999), in addition to bringing to the fore different perspectives (Hung, 2001). This collaborative activity corroborates literature on the processes of reflection, specifically how multiple perspectives are drawn upon in higher processes of dialogic and critical reflection (Hatton & Smith, 1995), and how one's perception of reality is altered by drawing on multiple perspectives (Boud et al., 1985; Boud, 2001). Strampel and Oliver (2007) suggest that three

elements promote reflection, namely learning tasks, learning resources and learning supports. Students used the podcasts as a learning resource, though the motivation for doing so differed. Strampel and Oliver (2007, p. 978) argue that students could use learning resources to expand 'their experience and conceptual basis'. Evidence pointing to the argument made by Strampel and Oliver is presented in section 1.3.3 of the current chapter.

Collaborative activity also highlights how, through social interaction, one gains knowledge and understanding (Perkins, 1999). This interaction leads to the modification of the mental structures or 'rules and resources' students can draw upon (Giddens, 1977). In this way, they either produce or reproduce structure in Giddens' terms. These structures in turn, shape how students interpret their experiences as they interact, potentially altering their behaviour when confronted with similar situations. For example, one student admitted to constantly reflecting on how they could make better use of the podcasts. The student indicated that it was difficult to download the podcasts from their home country, hence the purchase of a personal recorder, an instance of Giddens' 'reflexivity'. This student complained that he/she found it difficult to download podcasts from their home country due to limited bandwidth and intermittent access to the Internet. The same student also admitted to saving all podcasts on the hard-drive of his/her personal computer, while insisting that getting a digital audio recorder was a good investment as it could be used for work-related purposes.

Accessing podcasts through Vula or RSS feeds proved to be impractical in contexts with intermittent Internet access and limited bandwidth. These conditions compelled students to download and share audio artefacts for use at a later stage. This however, does not explain why the same students would download some podcasts more than once. Some students could possibly have listened to podcasts in computer labs where the computer used varied with successive visits to the labs. In this case, students would download a podcast for listening from the desktop, without saving it.

### 7.1.3 Interview Data

The general consensus among students interviewed is that podcasts are effective at supporting various learning activities and needs, including reflection. Bell et al. (2007) report that students using podcasts report positive effects on their grades, in addition to giving them the freedom to choose when, where and how they used the podcasts. Popova and Kirschner (2007) propose that there is indeed the probability of significantly improving the ability of students to reflect using podcasts. Popova and Kirschner suggest using podcasts specifically posing epistemic questions and concepts in higher education. Though not using podcasts, O'Hanlon and Diaz (2010) have shown that using 'open-ended reflective questions' help to improve learning outcomes as these encourage students to reflect on their learning. This shows that it is not enough to simply provide podcasts; the podcasts should encourage creative knowledge construction rather than knowledge transmission. Interview data shows that though all students agree that podcasts can be used to mediate learning, there are differences in the purposes for using them. There is a near even split, in terms of opinions regarding the optimal use of podcasts among the students interviewed. Some students felt that podcasts were not put to the best use on the module, while others felt otherwise. This indicates that mediation is not an automatic process for all students.

Some of the students interviewed disclosed they used podcasts to mediate reflection and others did not find them useful for that purpose. The responses from interview data, specifically those in section 7.1.3.3 best illustrate Giddens' concept of reflexivity. According to Cassell (1993) reflexivity is 'grounded in the continuous monitoring of action. ...' This is related to the reasons specific action is taken in particular situations. It also shows that human agents take action that makes a difference to them; no matter how trivial or inconsequential these may seem to others. This illustrates the inextricable link between structure (the attitudes and conceptions we hold) and agency (action and behaviour taken in particular social situations). This has been illustrated by the data from the access logs presented in section 1.1 of Chapter 6.

Analysis of the access logs reveal that some students downloaded no more than one podcast, while others used the same podcasts multiple times. It can be inferred from the access logs

that students using no more than one podcast may have chosen not to use the podcasts to mediate reflection. Others used the same podcasts more than once, indicating that some students may have found podcasts useful to mediate reflection.

Each of the themes and associated categories identified in section 1.3 of Chapter 6 are now discussed in turn. Both positive and negative experiences and opinions are presented. McGarr (2009) has proposed that podcasts are used for three reasons namely; making learning more flexible, increasing the accessibility of learning materials and enhancing learning experiences. These are evident in interview data presented below.

#### **7.1.3.1: Instructional design**

This theme highlighted two areas which students felt needed to be addressed in order for podcasts and technology in general, to be used effectively in educational contexts. McGarr (2009) concluded that how lecturers and students perceive podcasts would determine how they would use them. This in turn will be influenced by the pedagogies dominant in a particular learning context.

##### **Lecturer awareness**

The notion that HEIs adopt technology for teaching and learning purposes without being aware of how it can enhance these experiences is quite prevalent among students. Students indicate awareness of acceptable ways of using podcasts, pointing to Giddens' concept of legitimization. The data also reveals that students believe lecturers have power over them and are thus able to justify the motivation for using podcasts the way they do. Hence the call for lecturers to be sensitized on how technology can be used in ways that are acceptable to students, as illustrated by comments below from students who are also educators:

*So really we have to umm, educate lecturers about podcasting before they even use it. All the types of aspects of it, not just how to make it but all the implications of it. Especially when they are going to make students to make podcasts and they are using it in whichever methodology, whether its*

*reflective learning or reflexive learning or whatever type of methodology of learning they are using (04MR/7).*

*But I think what I can say about that is first to help lecturers understand the value that it adds to learning...it uses simple tools.... There is more utility of time yeah, in a more informal way (06MU/6).*

This is in contrast to literature, which indicates that academics are generally aware of the value technology brings to the teaching and learning experience in general and reflection in particular, as suggested by Säljö (1998) and Salmon (2002). Literature also shows that lecturers report being aware of acceptable ways of using podcasts, though the above comments suggest that such awareness cannot be taken for granted.

#### Training in pedagogical issues

Responses under this category point to an apparent gap in incorporating podcasts in a pedagogically sound manner. Students suggest lecturers should be helped to understand the value of podcasts.

*They've got to understand all the far reaching implications, pedagogically, epistemologically of podcasts before they start using it we have to really educate academics...What are all the implications of technology before they can even start using them...provide development for them by means of training and training them in sound pedagogical methods of how to use these types of things (04MR/7).*

Scholars have however, underscored the importance of using podcasts for more than just archiving lectures (seminar activities in this case) (McLoughlin & Lee, 2007). However, students still benefit from listening to podcast archives of lectures, suggest Panday and Lee (2007). This section highlights students' lack of clear understanding of the principles of the pedagogy used and its close alignment with Constructivist tenets. Reflective learning draws upon various Constructivist principles, including previous knowledge as the basis for

effective learning and knowledge acquisition, and building reflection time into the learning process.

### 7.1.3.2: Medium of use

Though most students find using audio podcasts useful, a few indicated that vodcasts would be more useful in this context. Literature, however suggests that all media can be used to promote reflection (Brockbank et al., 2002). Despite this, distribution patterns do not indicate a preference for either type of podcast as shown in section 1.1 of Chapter 6 and section 1.1 of the present chapter.

#### Audio versus Video

This category deals with meeting the learning needs of individual students. Though the concept of learning styles appears to be disputed, some students suggest that they learn better using multimedia resources. With student cohorts as diverse as the one under study, it is expected that not all students grasp content presented in a particular format in the same way. The call for using multimedia resources is supported by Salmon and Nie (2008), who contend that offering content in none-traditional formats can possibly scaffold the meaning making process. This leads to more effective learning, a fact not lost on some students:

*Because be it now I'm interested in video cast rather than (I: the audio one)  
yeah because I think those will give ... a very very strong message because  
people, the pictures is worth a thousand words (01MR/8).*

Using video could possibly cater for a greater range of learning needs, it can also be used to initially capture and maintain students' attention. Podcasts can also be used as a more effective aid to memory as well as help to keep students in the learning space psychologically.

*The podcast was a good help, so that's the reason why I see the picture still  
exactly and can you describe exactly what happened: like he was, from*

*where the camera was taken, where the person was standing, when the camera switched, all these things, how he looked at the course...When I have seen the podcast presentation the third time, with a few of his examples, it became 'aha', Ok, so it made me more interested in, and that was a good (02MR/9).*

However, video is not the only media providing multisensory learning experiences.

*And I also once I listened to this digital story with a podcast and that is beautiful as well to me. That is was beautiful because they combined it with sound effects, and you know that was really interesting. I also found it very useful because the person also put some screenshots of the places that they were telling the story about. So that was also quiet good for me (04MR/3).*

Despite this apparent lack of enthusiasm for audio podcasts, they have been shown to support a variety of student learning needs in studies at various universities, as reported by Bell et al. (2007). Compared to video podcasts, the audio podcasts of face-to-face sessions can be downloaded even with low bandwidth. The insistence for video podcasts despite the apparent issues with practicality for students once they leave campus could be due to the better learning experiences they are perceived to provide.

### **7.1.3.3: Learning support**

A great number of students seem to favour the use of podcasts to support their various learning needs. The categories emerging under this theme are quite diverse. Using podcasts as an aid to memory elicited the largest number of responses, with all but two of the seven students interviewed finding them useful in this regard. Literature reviewed shows that using podcasts as a learning resource can successfully support students, both academically and non-academically. Strampel and Oliver (2007, p. 979) argue that learning resources are a crucial element in providing multiple perspectives as these 'offers the content, information and underpinning knowledge students need to engage in all levels of reflection. ...' Studies conducted by the IMPALA partner universities have illustrated that students using podcasts

as a learning resource appreciate the chance to listen to lectures at their own pace, increasing the ease with which notes can be taken, as well as catching up on missed lectures. Salmon and Nie (2008) propose that podcasts can be used to support the transfer of and continuity of knowledge production processes, extending learning into the informal space. They suggest that using podcasts augments flexibility and learner control, learner motivation and engagement as well as learning discussions. In the study, students used terms like ‘replay’, ‘fill in the gaps’ and ‘recall’ to describe some of the cognitive benefits derived from using podcasts. This shows that podcasts mediated reflection at different levels. The following are the categories emerging under this theme.

#### Disability

Harris and Park (2008) have observed that podcasts are a valuable resource for students with disabilities. The University of Winchester, according to Harris and Park (2008, p. 550), uses podcasts as part of its dyslexia support scheme to help dyslexic students as a ‘sensory aid support mechanism. ...’ Podcasts can however be used to support all categories of disabled students with the exception of hearing-impaired ones.

*I should mention that before I came for this programme, we were faced with a similar situation which needed the use of podcasting at Makerere for students. A student came and this is a distance education student third year. The first semester she reported that she could not use her hands, she gets tired and has problems so if she writes more than 15 minutes, she starts just collapsing. So when this student came... we decided to say well, you can either use a computer storage system or use the phone (01MR/1).*

*Students with hearing difficulties would be excluded. I’ve had a deaf student in my class before and she sat in the front row and read my lips. She wouldn’t have been able to use podcasts (07FE/8).*

#### Enhanced note taking

Note taking is one of the methods students use to mediate reflection. This appeared to be the main reason students used podcasts on the ‘Issues and Debates’ module. Using podcasts at



one's convenience can lead to effective learning as students can interact with the lecturer during face-to-face sessions rather than take notes, as suggested in the study by Deal (2007). The comment below suggests that students engaged in discussions during face-to-face sessions rather than spend time taking notes:

*Umm the fact that you can be able to replay a session, umm I think that it's very helpful....because you don't have to waste all the time scribbling notes or points during the lecture, you can actually engage the lecturer, ask questions if you so wish because you know that you can umm write later...it helped me fill in the gaps (06MU/2, 5).*

All students who found podcasts useful also report using them to make comprehensive notes after face-to-face sessions. This suggests that podcasts mediated the note taking process outside the class at the student's convenience. They also indicated that they asked more questions in class if they were not concerned with taking detailed notes during face-to-face sessions as they used podcasts to make comprehensive notes later.

#### Language

Using podcasts to support students who are second or third language speakers of English in the South African context has shown much potential, states Ngambi (2008). Judging by composition of the 2009 cohort, it is not surprising that all students agreed that podcasts have a high probability of supporting the learning needs of second and third language speakers of English. The students were possibly drawing on personal experience as all interviewees were not first language English speakers. Referring specifically to one of the students on the module, who found it quite difficult to express herself in English; one student had this to say:

*...Z can replay again and again and from that then she gets to get the meaning...someone else, a classmate who might know English well and know her home language well, they can be able to explain to them. So with time they get to learn and are not left behind because sometimes language can be a barrier (06MU/6).*

This indicates that students are aware that podcasts mediate learning. It also highlights the importance of providing academic support to students who are second or third language English speakers. In the knowledge economy, where English is the default global language of communication in various fields, including education, students need to be supported with learning resources they can use easily and at their convenience. Podcasts are one such resource, as they can be used to provide support to students who are not first language English speakers and can be used to create artefacts that count toward assessment as suggested in the comment below:

*... like we have people in our group as well, whom I find that umm they are very few of them, maybe one or so, that are even less proficient than others in English. So I can just imagine if a person has got a problem speaking, writing (umm) should be much more difficult for that person. So if that person could reflect by umm audio medium, it would really help that person (04MR/5).*

While admitting that podcasts do mediate learning, some students are apprehensive about the lack of two-way communication between the student using the podcast and the academic distributing content as podcasts. This lack of two-way communication can however be attributed to other learning resources, including textbooks, handouts and Power Point presentations. This does not make these resources less useful. In the case of the module under investigation, students could give feedback through the blogs they wrote.

#### Memory aid

It is not surprising that this category appeared relevant to many students in a positive way. This could be because in order for one to reflect effectively, they have to be able to remember particular incidents or experiences. Probing previous experience is the basis on which reflection builds (Boud et al., 1985) and the podcasts as used on the 'Issues and Debates' module proved to be adequate for this purpose. Some found it quite valuable to be able to listen to sessions at their own discretion, especially that different lecturers took sessions. Students report '*forming a visual picture*', being given the '*opportunity to relearn*', '*quickly*

*recall*'; these terms suggest students engaged in cognitive retrieval and is associated with descriptive reflection. This clearly indicates that podcasts mediate reflection.

*When they say reflect and it is something which I found even for myself when I use this instrument, is that when it comes to reading, you'll only reflect the highlights of the day. There are certain subtle things you'll not remember, so this helps you remember **those points which you could not, may have taken for granted**. I will give you an example: today for instance we had three presenters; we had actually four including Dick, Phillip, Stephen and Andrew. Now out of those four, there were also discussions in between but you can be sure if you went to read the blogs which will come out of today, you may find a reflection on two rather than everything (01MR/4).*

*... with the introduction here and several of the tutors and in the last module in podcast I find it very effective yah. I was able to quickly recall what happened and also comments from individuals telling different sessions we had so I find it very useful and I see it as an opportunity to relearn... OK, of course I can recall very efficiently, very well the exact comments, it is better. Sometimes where you are reflecting without podcasting, you see that you miss out some facts. With this you can't. It's like a journalist that cover an interview, an event (03MR/2-3).*

*It is very useful for me I can say, because I can always go back and listen to the class inputs, of what everybody's views were, some things that I didn't remember. It's good for revision umm... But when you listen its actually you are also forming a visual picture almost of what happened in the class. So when you hear the voice you can also see... and you actually remember the whole incident. And you remember how you felt when he was getting excited. And it brings that feeling back into your heart so you can also reflect better than. So definitely podcasting for me it works very well for reflective (04MR/2-4).*

Significantly, podcasts have been found to support the transfer of and continuity of knowledge production processes, extending them into the informal space. This gives students

the opportunity to engage with content more constructively, thereby providing the means through which reflective learning can be mediated (Ng'ambi, 2008). Students use terms like 'relearn' to describe the ability of podcasts to extend learning beyond face-to-face sessions:

*I find it very effective yah. I was able to quickly recall what happened and also comments from individuals telling different sessions we had so I find it very useful and I see it as an opportunity to relearn... OK, of course I can recall very efficiently, very well the exact comments, it is better. Sometimes where you are reflecting without podcasting, you see that you miss out some facts (03MR/2-3).*

Students are also aware that simply providing lecture podcasts will not automatically lead to the mediation of reflection. Reflective processes need to be deliberately cultivated by integrating their use in learning activities.

*But for the work itself, it is not really helpful... But for myself, I don't need now to listen to what I just heard during the day (02MR/4).*

This echoes calls for using podcasts in more effective ways, as suggested by McLoughlin and Lee (2007). They urge that the true potential of podcasting lies in its ability to support student-generated content. 'Compelling' students to use podcasts by tightly integrating them with pedagogy appears to be one reason for the popularity of student-generated podcasts observed in the pilot study. During the pilot study, students were given tasks that required them to draw upon peers' reflections. This was not the case with the 2009 group. It is however difficult to conclude whether the drop in the use of podcasts in 2009 was due to lack of integration in tasks, the reduced time between sessions given the one-week delivery approach or both.

#### Reference/research aid

This category shows that students may want or need to use the podcasts long after the module has ended. This is an illustration of the concept of ‘reflexivity’ (Giddens, 1984). Giddens proposes that through reflexivity, we constantly examine not only action, but the social and physical aspects of our context as well. This scrutiny extends to future action and that of others as well. Students on the module may also want to share these resources with others, hence their call for some form of archiving outside the course site. Others said they used podcasts as a reference and research resource. This is a clear indication of use to broaden one’s experience and conceptual basis.

*Umm, it is...I think it's a good source of reference for me. I can always reference the material from the podcast. So yes it's something that I can always refer back to (04MR/2).*

Another student suggested that archiving them is a good idea as this would make the podcasts available for use long after students have left the university.

*One thing is that now I can build an archive of the things I have learnt. That tells me that twenty years to come I don't know who I'll be. I can always want to look back at what a particular course was about and without having to read many books I can listen again without recall what I was told then (06MU/3).*

#### 7.1.3.4: Selective listening

Listening habits reveal variation, which was not expected. Some students preferred podcasts of their peers’ content; others the lecturers’ content only, while some preferred both types, as the podcasts served different purposes. Higher forms of reflection, such as dialogic and critical reflection are based on and draw upon multiple factors and perspectives. Podcasting can therefore be used to provide students with a medium with which they can easily capture multiple viewpoints for use in formulating and reformulating arguments and critiques in various contexts. This shows that the podcasts provided alternative perspectives, which is

critical in the mediation of dialogic and critical reflection. This section also illustrates that student individual need (shaped by attitudes and conceptions) is a key determinant in the use or lack of use (agency/action or behaviour) of podcasts.

*To me it's more the students' things I think yeah.... The podcasting to me the lecturers' things it's like it can always be supplemented with other reading facts and reading materials, you know. I can find even something better in reading than in the podcasts if I'm after facts. But if I'm after people's interpretations of things then the podcast is quite nice because you can even listen to the way their voice is, the tone of their voice to know that they are excited, or they are interested. It says something about what they are feeling at that time when they are talking. So it's more about the students than about the lecturer for me (04MR/3).*

#### Individual need

Making podcasts available to students enables them to create learning spaces tailored to individual learning needs. This came through strongly in the study, with students indicating that the way they used the podcasts depended on their individual need. Students found both lecturer and student podcasts useful, though the manner in which some were recorded possibly made them less useful. Podcasts of peers were especially useful in providing the multiple perspectives that are important in critical reflection, the highest form of reflection-on-action.

*For the individual, it depended on what I wanted to achieve. Because for instance, aah it was hard to write up, like now whatever umm, the groups were presenting because it was somehow unstructured. Yeah so for that for me to be able to capture different viewpoints then it was helpful. And for the lecture, it was very helpful in another perspective were I needed to reflect on a particular article for instance (06MU/4).*

#### Lecturers' authority

Of interest was the need for validation of individual discursive activities by seeking out the lecturer's authority as opposed to seeking peers' views. This illustrates that students believe

that lecturers exert power over them; pointing to Giddens' notion of domination. According to Brooks et al. (2008), all regulated behaviour is the result of drawing on this modality, as is the allocation of material objects in achieving some form of agency through an exercise of power. Thus students feel that lecturers exert authority over them.

*The presenters were kind of helpful... hey talk from a position which has got more authority... I think they have read wider, they know better, they know their field so they are better ... Our reflections I would just edit from what we hear in class, we don't have much to ground our thinking (05MU/5).*

A dependence on lecturers, as is indicated in table 1.1 of Chapter 6, could imply a lack of confidence in oneself and peers, as well as a need for more structured scaffolding. Whatever the case, lecturers input is vital in the co-construction of knowledge. Students however need to be aware of the role technologies like podcasts bring about in changing the lecturer-student relationship, namely assigning lecturers the role of 'facilitator' (Kanuka & Anderson, 1999), placing the responsibility of managing learning in the students' hands.

#### **7.1.3.5: RSS feeds**

Students reported listening to the podcasts using their computers as opposed to mobile devices such as MP3 players. This corroborates podcast evaluation studies conducted by others, including Brittain et al. (2006), Edirisingha and Salmon (2007), Lane (2006a, 2006b) and Matthews (2006). One of the respondents however, admitted to using RSS feeds for non-academic purposes, while a further two were aware of them but never used them. This is in agreement with Lee, Miller and Newham (2008), who concluded that students do not use RSS feeds for academic purposes, even when they are aware that their use enables one to manage the search for content easily. Lee et al. (2008) offer several reasons for the lack of uptake of RSS feeds by students, including lack of technical knowledge regarding the possibilities of RSS feeds, fixed habits in relation to accessing the Internet and browsing the Web, as well as using multiple personal computers which limits the use of RSS feeds. In this context, these appear to be less pertinent compared to intermittent Internet access and limited

bandwidth. These socio-economic constraints determined how students' used the learning resources, podcasts in this context.

#### Use

Adam (2003) points out that 'Bandwidth is the scarcest ICTs resource in African universities. ...' In the context of this group, where students meet for an intensive week of contact sessions later dispersing to various locations across the continent, limited bandwidth and intermittent Internet connectivity could explain the low use of RSS feeds.

*We are in conditions, where we really have difficulty sometimes to get something downloaded. Either the bandwidth or it's very short (in time). ... It's rather difficult to use these technologies in our contexts in our countries, in the working environment, and so on (02MR/7-8).*

The same student admitted to using an aggregator for non-academic purposes. This could indicate that some students still need help in understanding the value of podcasts.

*Well, I don't know how far it counts when I do my downloads through iTunes, but for learning methods, own learning methods? No, it's true. No, because I use it more for news (for news) and other issues (02MR/2).*

This last quote could also demonstrate that students relate RSS feeds with entertainment only. They thus do not use them to simplify the process of acquiring and using podcasts for educational purposes. This corroborates findings by Lee et al. (2008) who claim that 'students may have fixed habits and patterns/behaviours in terms of the way they access the Internet and browse the Web'. Should the conditions change, new habits and behaviour may result. It should be mentioned that a lab session dedicated to podcasting was conducted and podcasting's possibilities, including how RSS feeds worked, were brought to the attention of students. Several students, including three who were interviewed, approached the researcher,



who assisted at the lab session, for more information on the use of RSS feeds. This interest, however did not translate into use.

## **7.2 CHAPTER SUMMARY**

The chapter has discussed the findings of the study. The researcher endeavoured to preserve the participants' voices as this has been shown to bring out their actual perceptions and experiences, as well as the meaning they attach to these experiences. The final chapter presents conclusions drawn from the findings as presented in this chapter. It also reviews the research questions and makes recommendation on the basis of the findings of the study.

## CHAPTER EIGHT

### CONCLUSION

#### 8.0 INTRODUCTION

This chapter presents the conclusions resulting from the study and makes recommendation for using podcasts to mediate reflection by proposing a framework. The extent to which the research objectives were met is reviewed guided by the research questions stated in Chapter 1. The chapter also gives suggestions for further research and recommendations for the effective use of podcasting for mediating student reflection at postgraduate level. It also outlines the limitations of the study.

The study set out to investigate ways that the use of podcasts could mediate reflective learning in a postgraduate module. The use of podcasts enabled students to use various cognitive processes with the aim of better articulating the knowledge production process. This was however highly dependent on students' individual needs and views regarding educational podcasting. Students attending the 'Issues and Debates' module used podcasts as an aid to memory, as well as a reference/research aid tool for future use. This shows that podcasts altered the knowledge structures students draw on. Students also used podcasts to create personalized learning spaces and made comprehensive notes after face-to-face sessions, extending learning beyond face-to-face sessions.

The researcher noticed that while the 2008 cohort was given a number of tasks which compelled them to use the podcasts by integrating them into tasks, this was not the case with the 2009 class. Students on both cohorts were required to reflect on their learning as the module progressed, either at the beginning or end of each face-to-face session, and through blogging. Podcasts of each student's reflections were created at the beginning or end of face-to-face sessions and uploaded onto the course site. One of the tasks given to the 2008 cohort required them to cite at least three other students in discussing how peers' reflections affected theirs. They had to listen to other student-generated podcasts in order to complete the task,

which was not the case in 2009. This could have also contributed to the low access frequencies, as the use of podcasts was optional. It is therefore recommended that podcasts be integrated pedagogically, if they are to be used effectively. This includes designing tasks requiring students to produce podcasts, possibly outside face-to-face sessions.

The study also revealed that in terms of accessing the podcasts, there is a near even split among students from other parts of Africa, with some being top users and others less frequent users of podcasts during the contact week. Whether this indicates the need for more academic support in integrating prior and new knowledge, underdeveloped information processing skills or novelty in using the technology needs further study as this was not explored in the present study.

Despite the reports of benefits on the process of reflection, students expressed concerns regarding the medium of use and awareness of the pedagogy of technology, as well as the value it brings to teaching and learning experiences of a cohort. The study also concludes that it is unlikely that students with intermittent Internet access and limited bandwidth will use RSS feeds as such are the contexts most students came from.

Table 8.0.1 below, based on table 2.2.2 proposed in Chapter 2 is suggested as a framework for using podcasts to mediate reflection at various levels. Podcasts intended to mediate reflection can range from lecture archives to student-generated ones. Lecture archives are best suited for mediating descriptive reflection as lecturers ask few question during lectures. Significantly, the questions posed during lectures are not meant to prompt specific types of reflection; they may be tailored toward checking comprehension and may be at the level of recall. This does not imply that lecture archives can not mediate reflection. The mediation of higher forms of reflection however, requires tasks incorporating questions which prompt students to think critically and provide solutions emphasizing multiple perspectives which call for analytical and critical thinking as a way of promoting reflection.

Table 8.0.1: Framework for mediating reflection using podcasts (based on Hatton & Smith, 1995; Strampel & Oliver, 2007 and Campf & Gallagher, 2007)

Type of reflection-		
on-action	Cognitive process	Suitable podcast
<b>Descriptive reflection</b>	Cognitive retrieval, i.e. recall, understand	Lecture archives
<b>Dialogic reflection</b>	Reconceptualization, i.e. associate, integrate, appropriate	Lecture archives, supplemental material
<b>Critical reflection</b>	Application, i.e. evaluate, apply, synthesize	Lecture archives, supplemental material, student-created podcasts

The researcher recommends involving students more in the podcast creation process, allowing them to record their artefacts away from the formal learning space. This ensures adequate time for reflection without the competing needs associated with face-to-face sessions.

The preceding section has presented the main conclusions and has suggested a framework for using podcasts to mediate reflection. The next section looks at the extent to which the research objectives were met by reviewing the research questions stated in Chapter 1.

## 8.1 REVIEW OF RESEARCH QUESTIONS

This section reviews the research questions stated in section 1.2 of Chapter 1.

### Primary Research Question

How are podcasts used to mediate reflection among postgraduate students at an institution of higher education?

## Secondary Research Questions

The following subsidiary questions were used to guide the study and answer the primary research question.

### Research question I: How can reflection be mediated?

Reflection was mediated by the use of podcasts in various ways, including being an aid to memory and as a support tool depending on individual needs. Students who found the podcasts useful for reflecting report that podcasts helped them *'recall events'*, *'replay the session'*, *'capture different viewpoints'* *'fill in the gaps'* and construct a *'visual picture'* of their experiences. These terms suggest that podcasts mediated descriptive, dialogic and critical reflection. As a support tool, podcasts were found to be a *'good source of reference'*, an aid to memory *'helps you remember'* and *'quickly recall'*, suggesting that using podcasts as a support tool can mediate descriptive reflection. Students also report that podcasts enhanced note taking as they were able to *'actually engage the lecturer'* during face-to-face sessions without being overly concerned with note-taking. This is in addition to giving students a choice in when they can engage in these reflective activities. Detailed discussion is given in section 1.3.3 of Chapter 7.

### Research question II: What podcasting learning activities support reflection?

The purpose of generating podcasts from face-to-face sessions was to provide students with learning resources they could use in augmenting reflection. Section 1.3.1 of Chapter 7 however demonstrates that students' views of podcast use are not always in agreement with lecturers' views. This could have affected their use.

Students however used podcasts to enhance traditional reflective practices, such as note-taking and revisiting class activities, at their convenience, and away from the formal learning space. This is discussed in section 1.3.3 of Chapter 7. Providing students the option of choosing where, when and how they reflect, presents them the opportunity for more effective reflection outside the formal learning space. During face-to-face sessions, there are various needs competing for students' attention and as such, students are not able to reflect

effectively. These competing needs may significantly lessen outside face-to-face sessions, enabling students to reflect better outside formal learning spaces.

**Research question III:** How has the use of podcasts altered the way in which students use various learning resources?

The study showed that though new patterns of behaviour were evident, students continued to use the various resources provided. Students still read through their course handouts and consulted with peers. Though students were required to reflect on the face-to-face sessions by writing a blog in both 2008 and 2009, the fact that some students managed to write a blog having accessed a single podcast only shows that the additional learning resource students chose to use or not, was at their discretion. Other students on the other hand, found podcasts indispensable; illustrated by the student with the highest download frequency. This is highlighted in section 1.3.3 of Chapter 7. There was however one example of alternative behaviour from the main study. One student bought a digital audio recorder and created his own audio artefacts, which were shared with peers on the module.

**Research question IV:** How has the use of podcasts transformed students' habits of reflection?

The study showed that students' habits of reflection had not changed significantly through the use of podcasts. The study however found that podcasts gave students an additional aid to reflection, one with more flexibility over time and location of use. This made it easier for students to personalize and own the process of reflection. This is highlighted in sections 1.3.3 and 1.3.4 of Chapter 7. Interview data shows that podcasts were effective at mediating descriptive reflection, and provides evidence that podcasts can also mediate dialogic and critical reflection.

The previous section has reviewed the research questions presented in Chapter 1. The next section provides suggestions for further research.

## 8.2 SUGGESTIONS FOR FURTHER RESEARCH

Interview data in sections 1.3.3 and 1.3.4 of Chapter 7 shows that descriptive, dialogic and critical reflection can be mediated using podcasts. Though students report that they reflected better using podcasts, the study did not explore whether or not podcast mediated reflection differs from reflection mediated through other methods, such as taking notes during lectures. The researcher therefore recommends investigating whether podcast-mediated reflection differs from reflection mediated through other methods, and how significant this difference is, if any.

All students enrolled on 'Issues and Debate's were encouraged to keep a reflective journal (as a blog). Research could thus be conducted into how podcasts affect reflexive writing by looking for evidence of reflection in student writing from their blogs. The framework developed by Hatton and Smith (1995), used with the summary proposed in table 2.2.2 of Chapter 2 could be used to this effect. Alternatively, thematic analysis could be carried out on extracts of students' reflective blogs and research extended to the exploration of podcast-mediated collaborative and personalized writing.

The study also revealed that in terms of accessing the podcasts, there is a near even split among students from other parts of Africa, with some being top users and others less frequent users of podcasts during the contact week. Research could be conducted to determine whether students need more academic support in integrating prior knowledge and new knowledge, or whether this is an indication of underdeveloped information processing skills or novelty in using the technology.

The previous section made suggestions for further research and made recommendation based on the research findings that could be used to make the use of podcasting in supporting student reflection at postgraduate level more effective. The final section outlines some limitations identified during the study.

### 8.3 LIMITATIONS OF THE STUDY

The 'Issues and Debates' module was first run in 2007 and while the curriculum has not undergone any changes, the mode of delivery has changed to include pre-contact assignments, one-week contact time and post-contact assignments. Even under ideal conditions, students have difficulty adopting effective reflective practices. The demands of the one-week contact time made it difficult for students to put the podcasts to good use as the module was in progress in 2009. This study did not investigate whether students used podcasts after the contact week. This highlighted the fact that minimum conditions need to be met, in addition to providing the opportunity for podcasts to be used. One of these conditions is giving adequate time for reflection, which is not feasible in a one-week block release delivery mode consisting of seminars and other student activities. This is illustrated by students' suggestions that they would like the podcasts made available for use even after they graduate from the university. This challenge could be attributed to using institutional LMSs as podcast servers, as students no longer have access once they graduate.

Though all students kept a reflective journal, not all of them took advantage of the affordances podcasts provided in mediating the reflective process. In this case, students used the podcasts provided as an add-on, rather than as an integral part of the curriculum as envisaged by course developers. Student tasks therefore need to be designed and focussed with the intention of making podcasts an integral part of the curriculum. Despite the fact that podcasts can be used to support students' learning needs, the small sample size means that the findings cannot be generalized to the general higher education student population.

It would have been preferable to allow a reasonable amount of time to lapse before conducting the interviews to enable students to properly reflect on their use of podcasts. However, this was not possible as the students were not resident in Cape Town. Ideally, follow-up interviews or focus-group discussions should have been conducted; these would have enabled students react to and build on their colleagues' responses.

### 8.4 CONCLUDING REMARKS

This study has provided insight into how podcasts can be used to mediate reflection. It has investigated two cohorts of students (2008 and 2009) enrolled on a postgraduate programme



in Education and registered for 'Issues and Debates', a core module which made extensive use of podcasts as a learning resource. The study has shown that, like other technologies used in education, simply making podcasts available to students does not necessarily mediate reflection. The study concludes that using Constructivist principles in integrating podcasts into learning activities can mediate reflection and has illustrated the link between structure and agency. The study has concluded that different types of podcasts mediate various forms of reflection, and proposed a framework that can be used to mediate various forms of reflection, including descriptive, dialogic and critical reflection.

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## APPENDICES

### Appendix A: Interview schedule

#### **Using Podcasting for Reflective Learning in Higher Education**

##### **Semi-Structured Interview Guide**

1. What was your initial knowledge of podcasting before enrolling for this programme of study?
2. What are your views regarding the use of podcasting for teaching and learning purposes?
3. What has been your experience of using podcasting for learning?
4. In what ways did using podcasts for learning for the first time help your learning?
5. Describe the time, device and location you were at when listening to the podcasts?
6. What has been the impact of using podcasts on your learning experience?
7. Did you use the podcasts with any of the other learning resources provided on-line?
8. Which of the podcasts were more useful for your individual learning needs, i.e. the lecturers', fellow students' reflections or your own reflections?
9. How does reflection supported by podcasting differ from reflection through normal structured campus processes?
10. How would you make the podcasts more useful for learning in a reflective learning context?
11. In what ways did the podcasts make reflection easier, flexible or more successful for you?
12. What is the potential of podcasts for supporting students whose first language is not English?
13. In what ways did the podcasts provide opportunities for self-improvement and continued learning after face to face sessions?
14. What are some of the concerns you would like to address related to using podcasting for reflective learning?

## Appendix B: Research outline

Research Title: Using podcasts to mediate reflective learning: a case of a postgraduate programme at a higher education institution

Methodological Approach: Qualitative Case Study using Naturalistic/Participant Observation			
Timeline	Planned Activity	Objective	Output
June-November 2009  (Four months)	Collect data via:  ~Participant Observation  ~Student interviews  ~Artefacts	~Observe students as they interact with peers and teaching staff within a natural setting  ~Conduct face to face student interviews  ~Collect podcast access logs  ~Sample of reflective piece of writing from students interviewed	~Draw lessons from students experiences with podcasting  ~Audio files of interviews  ~Graphical representation of access patterns  ~Look for evidence of reflection using the framework from Hatton & Smith (1995)
August- November 2009  (Three months)	Transcribe interviews	~Convert audio files into text  ~Identify similarities and differences for grouping and coding purposes	~Transcripts of interviews conducted  ~Groups/categories identified and codes developed

Timeline	Planned Activity	Objective	Output
November 2009 – March 2010  (Four months)	Data analysis	Analyse data collected	~Access the role of podcasting in promoting reflection in higher education as illustrated from study  ~Propose conditions of podcasting for promoting reflection in higher education
November 2009 - May 2010  (Five months)	Draft dissertation		Present initial draft to supervisor at the end of January 2010
May - August 2010  (Two months)	Revise as advised	Effect changes as discussed and agreed upon with supervisor	Revised document
August 2010	Submission	Submit thesis for examination	Thesis submitted

#### Appendix C: Sites publishing podcasts on Vula

Faculty	Number of sites
Commerce	7
Engineering and the Built Environment	2
Health ScienceS	2
Humanities	7
Science	10
Project	9
Unknown	3
<b>Total</b>	<b>40</b>

## CONSENT FORM

**Researcher Name:** Annette Lombe

**Name of Institution:** University of Cape Town

**Email:** Annette.Lombe@uct.ac.za

Dear Respondent

Thank you for agreeing to take part in this study. This form outlines the purposes of the study and gives a description of your involvement as a respondent.

### Purpose of Study

The purpose of this study is to fulfill a course requirement for my Masters in Philosophy of Education at the University of Cape Town. I would look to uncovering how podcasts can be used to promote reflection in learning for students who's first language is not English.

### Data Collection Methods

In addition to class observations, I will interview students on how podcasts promoted reflection as they were used during the ICTs modules. I will make audio recordings of the interviews, which I will later transcribe. I will use the interview transcribes to develop themes of responses.

The information collected from this study will be used to write my thesis. The thesis will be read by my supervisor and two external examiners. The thesis will later be lodged in the university library where it can be read.

The following conditions will be met:

1. Your participation in this study is voluntary. You have the right to withdraw at any time should you wish to do so.
2. Your name will not be revealed to anyone, either verbally or in written form in the thesis or anywhere else.
3. Audio recordings will not be used for purposes other than for this study and will not be played to anyone else. The recordings will be deleted when the thesis has been submitted.

---

Please respond to the questions below.

Do you give permission to be interviewed?

Yes: \_\_\_\_\_ No: \_\_\_\_\_

Do you give permission for the interview to be audio recorded?

Yes: \_\_\_\_\_ No: \_\_\_\_\_

Kindly sign and date the form below.

I agree for the information I give in the interview to be used for the purposes outlined above only.

Respondent: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_